



## PROJECT NOTE

To: Jard Company Inc. Hazard Ranking System Project File

From: John Burton, Weston Solutions, Inc. (WESTON®), Superfund Technical Assessment and Response Team III (START)

Thru: Mr. John F. Kelly, Project Leader, START

Date: 30 September 2013

RE: Adjusted Values for PCB Data  
Case 43392; SDG A4A90  
TDD No. 13-09-0001; Task No. 0904-48; DC No. A-6868

### Introduction

The following Project Note describes the usability of polychlorinated biphenyls (PCBs) analytical results for 11 ground water samples collected from the Jard Company Inc. site and from background locations located in Bennington, Bennington County, Vermont. The samples were collected by Weston Solutions, Inc. (WESTON®), Superfund Technical Assessment and Response Team III (START) for the purpose of performing a Site Reassessment in support of a U.S. Environmental Protection Agency (EPA) Hazard Ranking System (HRS)/National Priorities List (NPL) Documentation Record. The analytical data were validated at a Tier II level according to Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses and the USEPA CLP National Functional Guidelines for Superfund Organic Methods.

Upon review of the Tier II validated analytical data, certain criteria of the EPA Headquarters guidelines were found to be lacking. This Project Note was created to identify the gaps and document the process used to revise the analytical results for inclusion in the Jard Company Inc. HRS/NPL Documentation Record.

### Sample Quantitation Limit Determination

Table 1 of this Project Note summarizes the validated analytical results for Aroclor (PCB) analysis. Table 2 of this Project Note reports the sample-adjusted Contract Required Quantitation Limit (CRQL) for each sample, which is either the CRQL or a raised value due to the dilution factor, sample volume, and/or final volume. Tables 3 and 4 summarize the results of the review and adjustment of the selected analytical results used in the Jard Company Inc. HRS/NPL Documentation Record. Tables 1, 2, 3, and 4 are included in *Attachment A* of this Project Note. The memorandum detailing the original validated results is included in *Attachment B* of this Project Note.



The sample-adjusted CRQLs were calculated as follows: the PCB sample-adjusted CRQLs [in micrograms per liter ( $\mu\text{g/L}$ )] was calculated by multiplying the CRQL (in  $\mu\text{g/L}$ ) for the substance by the method extraction volume [1000 milliliters (mL) nominally] times the volume of the extract in microliters ( $\mu\text{L}$ ) times the dilution factor (DF), dividing this result by the sample volume extracted (in mL) times the method final volume [10,000 microliters ( $\mu\text{L}$ ) nominally]. The volume extracted in mL, the final extract volume in  $\mu\text{L}$ , and dilution factors are reported on the Form I for the sample.

$$\text{Sample-adjusted CRQL } (\mu\text{g/L}) = \text{CRQL} \times \frac{(V_x) \times (V_t) \times \text{DF}}{(V_o) \times (V_c)}$$

CRQL = in  $\mu\text{g/L}$

$V_o$  = Sample Volume in mL

$V_c$  = Contract extract volume (10,000  $\mu\text{L}$ )

$V_x$  = Contract Sample Volume (1000 mL)

$V_t$  = Volume of extract in  $\mu\text{L}$

DF = Dilution Factor

Copies of the pertinent Form I's have been included in *Attachment C* of this Project Note. CRQLs are listed in the *USEPA Contract Laboratory Program Statement of Work for Organics Analysis, Multi-media Multi-concentration, SOM01.1*, and the *Modifications Updating SOM01.1 to SOM01.2*, for PCBs, the pertinent portions of which are included in *Attachment D* of this Project Note.

### **Data Usability**

The samples used to support the Jard Company Inc. HRS/NPL Documentation Record fall into two groups: "Background Samples" or "Release Samples". Eight ground water samples referenced in sample delivery group (SDG) A4A90 (GW-03, GW-04, GW-05, GW-06, GW-07, GW-08, GW-10, and GW-11) were collected from ground water monitoring wells on the Jard Company Inc. property and from downgradient properties, and are used to establish an observed release of hazardous substances. These samples are referred to as "release samples." Only Aroclor-1242 is evaluated for these samples under this Project Note.

Three ground water samples (GW-01, GW-02, and GW-09) were collected from monitoring wells located up-gradient or cross-gradient, off-site, and presumably outside the zone of influence of suspected source areas associated with the Jard Company Inc. property, to document background ground water conditions. These samples are referred to as "background samples". All Aroclors were evaluated for these samples under this Project Note.

Upon review of the validated analytical results, certain data were found to be qualified with a "J". These data were further reviewed in accordance with EPA guidance detailed in *Using Qualified Data to Document an Observed Release and Observed Contamination*, included as *Attachment E* of this Project Note, to determine their usability. Sample results that were below the sample-adjusted CRQL and that were qualified with a "J" were not evaluated/adjusted because the data cannot be used to support the Jard Company Inc. HRS/NPL Documentation Record.



EPA guidance indicates that qualified data may be used to support site proposal to the NPL, although, in some cases the data must be modified using an adjustment factor, depending upon the use of the data (data for a “release sample” or a “background sample”). Exhibit 3 of the aforementioned EPA guidance summarizes the use of adjustment factors for “J” qualified data, and is reproduced below.

<b>Exhibit 3 Use of Adjustment Factors for “J” Qualified Data</b>		
Type of Sample	Type of Bias	Action Required
Background Sample	No Bias	None: Use Concentration Without Adjustment Factor
	Low Bias	Multiply Concentration by Adjustment Factor
	High Bias	None: Use Concentration Without Adjustment Factor
	Unknown Bias	Multiply Concentration by Adjustment Factor
Release Sample	No Bias	None: Use Concentration Without Adjustment Factor
	Low Bias	None: Use Concentration Without Adjustment Factor
	High Bias	Divide Concentration by Adjustment Factor
	Unknown Bias	Divide Concentration by Adjustment Factor

In some cases, the direction of bias was reported in the Tier II data validation package. In many cases, however, the direction of bias in the “J” qualified data was not included in the Tier II data validation package. In such cases, the data were reviewed by a START data validator, and the direction of bias was determined, where possible. In some situations, multiple, conflicting biases were identified, which prevented the validator from determining the direction of the bias. In these situations, an unknown bias was applied to the validated result.

Tables 3 and 4 summarize the results of the review of the selected analytical results used in the Jard Company Inc. HRS/NPL Documentation Record. For the samples, all of the previously mentioned elements are listed, whether qualified or not. The validated analytical result, the reason for qualification, the direction of bias (if known), the EPA Adjustment Factor (from *Using Qualified Data to Document an Observed Release and Observed Contamination*, Table 3 for Pesticide/PCB analytes), and the adjusted result are listed in Tables 3 and 4. Table 3 contains the “background sample” review and adjustment, and Table 4 contains the “release sample” review and adjustment.

## Attachment A

### Tables

Case No. 43392; SDG No. A4A90



SITE: JARD COMPANY INC  
CASE: 43392 SDG: A4A90  
LABORATORY: CHEMTECH  
CONSULTING GROUP

DATA SUMMARY TABLE 1  
AROCOR AQUEOUS ANALYSIS  
µg/L

SAMPLE NUMBER			A4A90	A4A91	A4A92	A4A93	A4A94	A4A95	A4A96
SAMPLE LOCATION			GW-01	GW-02	GW-03	GW-04	GW-05	GW-06	GW-07
STATION LOCATION			JCW-001	JCW-002	JCW-003	JCW-004	JCW-005	JCW-006	JCW-007
LABORATORY NUMBER			E1725-01	E1725-02	E1725-03	E1725-14	E1725-15	E1725-16	E1725-17
COMPOUND	MDL	CRQL							
Aroclor-1016	0.08	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1221	0.29	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1232	0.03	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242	0.03	1.0	1.0 U	1.0 U	1.0 U	93 *	180 *	98 *	26.0 *J
Aroclor-1248	0.02	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1254	0.05	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1260	0.04	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1262	0.2	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1268	0.06	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
DILUTION FACTOR			1.0	1.0	1.0	1.0 / 20*	1.0 / 20*	1.0 / 20*	1.0 / 5.0*
DATE SAMPLED			4/2/2013	4/2/2013	4/2/2013	4/2/2013	4/2/2013	4/2/2013	4/2/2013
DATE EXTRACTED			4/5/2013	4/5/2013	4/5/2013	4/5/2013	4/5/2013	4/5/2013	4/5/2013
DATE ANALYZED			4/5/2013	4/5/2013	4/5/2013	4/8/2013	4/8/2013	4/8/2013	4/8/2013
SAMPLE VOLUME (mL)			1000	1000	1000	1000	1000	1000	1000

NOTES: µg/L = micrograms per Liter  
MDL= Method Detection Limit  
CRQL = Contract Required Quantitation Limit  
U = Value is Non-Detected.  
UJ = Value is Non-Detected, and Detection Limit is Estimated.  
J = Value is Estimated.  
\* = Reported value is from diluted analysis.  
mL = milliLiter

SITE: JARD COMPANY INC  
CASE: 43392 SDG: A4A90  
LABORATORY: CHEMTECH  
CONSULTING GROUP

DATA SUMMARY TABLE 1  
AROCOR AQUEOUS ANALYSIS  
µg/L

SAMPLE NUMBER			A4A97	A4A98	A4A99	A4B00		
SAMPLE LOCATION			GW-08	GW-09	GW-10	GW-11		
STATION LOCATION			JCW-008	JCW-009	JCW-010	JCW-011		
LABORATORY NUMBER			E1725-04	E1725-05	E1725-06	E1725-09		
COMPOUND	MDL	CRQL						
Aroclor-1016	0.08	1.0	1.0 U	1.0 U	1.0 U	1.0 U		
Aroclor-1221	0.29	1.0	1.0 U	1.0 U	1.0 U	1.0 U		
Aroclor-1232	0.03	1.0	1.0 U	1.0 U	1.0 U	1.0 U		
Aroclor-1242	0.03	1.0	9.0	1.0 U	1.0 U	9.4		
Aroclor-1248	0.02	1.0	1.0 U	1.0 U	1.0 U	1.0 U		
Aroclor-1254	0.05	1.0	1.0 U	1.0 U	1.0 U	1.0 U		
Aroclor-1260	0.04	1.0	1.0 U	1.0 U	1.0 U	1.0 U		
Aroclor-1262	0.2	1.0	1.0 U	1.0 U	1.0 U	1.0 U		
Aroclor-1268	0.06	1.0	1.0 U	1.0 U	1.0 U	1.0 U		
DILUTION FACTOR			1.0	1.0	1.0	1.0		
DATE SAMPLED			4/2/2013	4/2/2013	4/2/2013	4/2/2013		
DATE EXTRACTED			4/5/2013	4/5/2013	4/5/2013	4/5/2013		
DATE ANALYZED			4/8/2013	4/5/2013	4/5/2013	4/8/2013		
SAMPLE VOLUME (mL)			1000	1000	1000	1000		

**NOTES:** µg/L = micrograms per Liter  
MDL= Method Detection Limit  
CRQL = Contract Required Quantitation Limit  
U = Value is Non-Detected.  
UJ = Value is Non-Detected, and Detection Limit is Estimated.  
J = Value is Estimated.  
\* = Reported value is from diluted analysis.  
mL = milliLiter

SITE: JARD COMPANY INC  
CASE: 43392 SDG: A4A90  
LABORATORY: CHEMTECH  
CONSULTING GROUP

DATA SUMMARY TABLE 2  
SAMPLE ADJUSTED CRQL  
µg/L

SAMPLE NUMBER			A4A90	A4A91	A4A92	A4A93	A4A94	A4A95	A4A96
SAMPLE LOCATION			GW-01	GW-02	GW-03	GW-04	GW-05	GW-06	GW-07
STATION LOCATION			JCW-001	JCW-002	JCW-003	JCW-004	JCW-005	JCW-006	JCW-007
LABORATORY NUMBER			E1725-01	E1725-02	E1725-03	E1725-14	E1725-15	E1725-16	E1725-17
COMPOUND	MDL	CRQL							
Aroclor-1016	0.08	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Aroclor-1221	0.29	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Aroclor-1232	0.03	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Aroclor-1242	0.03	1.0	1.0	1.0	1.0	20 *	20 *	20 *	5.0 *
Aroclor-1248	0.02	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Aroclor-1254	0.05	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Aroclor-1260	0.04	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Aroclor-1262	0.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Aroclor-1268	0.06	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
DILUTION FACTOR			1.0	1.0	1.0	1.0 / 20*	1.0 / 20*	1.0 / 20*	1.0 / 5.0*
DATE SAMPLED			4/2/2013	4/2/2013	4/2/2013	4/2/2013	4/2/2013	4/2/2013	4/2/2013
DATE EXTRACTED			4/5/2013	4/5/2013	4/5/2013	4/5/2013	4/5/2013	4/5/2013	4/5/2013
DATE ANALYZED			4/5/2013	4/5/2013	4/5/2013	4/8/2013	4/8/2013	4/8/2013	4/8/2013
SAMPLE VOLUME (mL)			1000	1000	1000	1000	1000	1000	1000

**NOTES:** µg/L = micrograms per Liter  
MDL= Method Detection Limit  
CRQL = Contract Required Quantitation Limit  
U = Value is Non-Detected.  
JJ = Value is Non-Detected, and Detection Limit is Estimated.  
J = Value is Estimated.  
\* = Reported value is from diluted analysis.  
mL = milliLiter

SITE: JARD COMPANY INC  
CASE: 43392 SDG: A4A90  
LABORATORY: CHEMTECH  
CONSULTING GROUP

DATA SUMMARY TABLE 2  
SAMPLE ADJUSTED CRQL  
µg/L

SAMPLE NUMBER			A4A97	A4A98	A4A99	A4B00		
SAMPLE LOCATION			GW-08	GW-09	GW-10	GW-11		
STATION LOCATION			JCW-008	JCW-009	JCW-010	JCW-011		
LABORATORY NUMBER			E1725-04	E1725-05	E1725-06	E1725-09		
COMPOUND	MDL	CRQL						
Aroclor-1016	0.08	1.0	1.0	1.0	1.0	1.0		
Aroclor-1221	0.29	1.0	1.0	1.0	1.0	1.0		
Aroclor-1232	0.03	1.0	1.0	1.0	1.0	1.0		
Aroclor-1242	0.03	1.0	1.0	1.0	1.0	1.0		
Aroclor-1248	0.02	1.0	1.0	1.0	1.0	1.0		
Aroclor-1254	0.05	1.0	1.0	1.0	1.0	1.0		
Aroclor-1260	0.04	1.0	1.0	1.0	1.0	1.0		
Aroclor-1262	0.2	1.0	1.0	1.0	1.0	1.0		
Aroclor-1268	0.06	1.0	1.0	1.0	1.0	1.0		
DILUTION FACTOR			1.0	1.0	1.0	1.0		
DATE SAMPLED			4/2/2013	4/2/2013	4/2/2013	4/2/2013		
DATE EXTRACTED			4/5/2013	4/5/2013	4/5/2013	4/5/2013		
DATE ANALYZED			4/8/2013	4/5/2013	4/5/2013	4/8/2013		
SAMPLE VOLUME (mL)			1000	1000	1000	1000		

**NOTES:** µg/L = micrograms per Liter  
MDL= Method Detection Limit  
CRQL = Contract Required Quantitation Limit  
U = Value is Non-Detected.  
UJ = Value is Non-Detected, and Detection Limit is Estimated.  
J = Value is Estimated.  
\* = Reported value is from diluted analysis.  
mL = milliLiter

**Table 3**  
**Sample Analytical Results Qualification Table**  
**(Background Samples)**

Sample ID	Analyte	Analytical Result (µg/L)	Sample-adjusted CRQL (µg/L)	Qualifications due to:	Biased High, Biased Low, No Bias, or Unknown Bias	Adjustment Factor (Attachment E)	Adjusted Analytical Result (AAR) (µg/L)	Notes
GW-01	Aroclor 1016	1 U	1	None	No Bias	10	NA	
	Aroclor 1221	1 U	1	None	No Bias	10	NA	
	Aroclor 1232	1 U	1	None	No Bias	10	NA	
	Aroclor 1242	1 U	1	None	No Bias	10	NA	
	Aroclor 1248	1 U	1	None	No Bias	10	NA	
	Aroclor 1254	1 U	1	None	No Bias	10	NA	
	Aroclor 1260	1 U	1	None	No Bias	10	NA	
	Aroclor 1262	1 U	1	None	No Bias	10	NA	
	Aroclor 1268	1 U	1	None	No Bias	10	NA	
GW-02	Aroclor 1016	1 U	1	None	No Bias	10	NA	
	Aroclor 1221	1 U	1	None	No Bias	10	NA	
	Aroclor 1232	1 U	1	None	No Bias	10	NA	
	Aroclor 1242	1 U	1	None	No Bias	10	NA	
	Aroclor 1248	1 U	1	None	No Bias	10	NA	
	Aroclor 1254	1 U	1	None	No Bias	10	NA	
	Aroclor 1260	1 U	1	None	No Bias	10	NA	
	Aroclor 1262	1 U	1	None	No Bias	10	NA	
	Aroclor 1268	1 U	1	None	No Bias	10	NA	

**Table 3**  
**Sample Analytical Results Qualification Table**  
**(Background Samples)**

GW-09	Aroclor 1016	1 U	1	None	No Bias	10	NA	
	Aroclor 1221	1 U	1	None	No Bias	10	NA	
	Aroclor 1232	1 U	1	None	No Bias	10	NA	
	Aroclor 1242	1 U	1	None	No Bias	10	NA	
	Aroclor 1248	1 U	1	None	No Bias	10	NA	
	Aroclor 1254	1 U	1	None	No Bias	10	NA	
	Aroclor 1260	1 U	1	None	No Bias	10	NA	
	Aroclor 1262	1 U	1	None	No Bias	10	NA	
	Aroclor 1268	1 U	1	None	No Bias	10	NA	

**Notes:**

µg/L = Micrograms per Liter  
 CRQL = Contract Required Quantitation Limit  
 AAR = Adjusted Analytical Result  
 < = Less than  
 > = Greater than  
 U = Value is Non-Detected.  
 NA = Not Applicable

**Table 4**  
**Sample Analytical Results Qualification Table**  
**(Release Samples)**

Sample ID	Analyte	Analytical Result (µg/L)	Sample-adjusted CRQL (µg/L)	Qualifications due to:	Biased High, Biased Low, No Bias, or Unknown Bias	Adjustment Factor (Attachment E)	Adjusted Analytical Result (AAR) (µg/L)	Notes
GW-03	Aroclor 1242	1 U	1	None	No Bias	10	NA	Analytical result is not detected at the sample adjusted CRQL
GW-04	Aroclor 1242	93	20	None	No Bias	10	93	Analytical result greater than sample adjusted CRQL
GW-05	Aroclor 1242	180	20	None	No Bias	10	180	Analytical result greater than sample adjusted CRQL
GW-06	Aroclor 1242	98	20	None	No Bias	10	98	Analytical result greater than sample adjusted CRQL
GW-07	Aroclor 1242	26 J	5	Dual column correlation did not meet % Difference criteria	Unknown	10	2.6	AAR< Sample adjusted CRQL
GW-08	Aroclor 1242	9.0	1	None	No Bias	10	9.0	Analytical result greater than sample adjusted CRQL
GW-10	Aroclor 1242	1 U	1	None	No Bias	10	NA	Analytical result is not detected at the sample adjusted CRQL
GW-11	Aroclor 1242	9.4	1	None	No Bias	10	9.4	Analytical result greater than sample adjusted CRQL

**Notes:**

µg/L = Micrograms per Liter  
CRQL = Contract Required Quantitation Limit  
AAR = Adjusted Analytical Result  
< = Less than  
> = Greater than  
U = Value is Non-Detected.  
NA = Not Applicable

Attachment B

Data Validation Memorandum  
Case No. 43392; SDG No. A4A90





Weston Solutions, Inc.  
East Division  
3 Riverside Drive  
Andover, Massachusetts 01810  
978-552-2100 - Fax 978-658-0700

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM  
EPA CONTRACT EP-W-05-042

21 August 2013  
20114-081-998-0850-49  
DC No. A-6828

Ms. Martha Bosworth  
U.S. EPA Region I - New England  
Emergency Planning & Response Branch  
5 Post Office Square, Suite 100  
Mail Code OSRR07-2  
Boston, Massachusetts 02109-3912

Subject: Case No. 43392; SDG No. A4A90  
ChemTech Consulting Group (Chem)  
Jard Company Inc  
Bennington, Vermont  
AROCOLOR: 11/Aqueous/A4A90-A4A99, A4B00  
(Field Duplicates A4A97/A4B00)  
6/Aqueous Equipment Blanks/A4B01, A4B02, A4B05-A4B08  
2/Aqueous PEs/A4B03, A4B04  
CERCLIS No. VTD048141741  
TDD No. 12-10-0008, Task No. 0850-49

Dear Ms. Bosworth:

A Tier II validation was performed on the organic analytical data for 11 aqueous samples and six aqueous equipment (rinsate) blanks collected by WESTON START at the Jard Company Inc site in Bennington, Vermont, and for two PE samples obtained from EPA Region I. The samples were analyzed under CLP following SOW SOM01.2 as low/medium level for Aroclor compounds. The data were evaluated as Tier II level in accordance with the "Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses" dated December 1996, and the USEPA CLP National Functional Guidelines for Superfund Organic Methods, and were based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues.
- \* • Data Completeness.
- \* • Preservation and Technical Holding Times.
- \* • GC/MS and GC/ECD Instrument Performance Checks.
- IC and CC.
- \* • Blanks.
- \* • Surrogate Compounds.
- NA • IS.
- \* • MS/MSD.
- \* • Field Duplicates.
- NA • Sensitivity Check (MDL Study or LFB).
- \* • PE Samples/Accuracy Check.

- Target Compound Identification.
- \* • Sample Quantitation and Reported Quantitation Limits.
- NA • TICs.
- \* • SVOC and PEST/PCB Cleanup.
- \* • System Performance.
- NA • SEDD/ADR.
- \* = No qualifications will be applied based on this parameter.

Table I summarizes overall evaluation of the data with reference to the DQO and potential usability issues. Qualified data are summarized in Data Summary Table 1.

### **Overall Evaluation of Data and Potential Usability Issues**

See Table I for overall evaluation of data and potential usability issues.

### **Initial and Continuing Calibration**

Compounds that did not meet RSD criteria in the IC, %D criteria in the CC, and/or RRF criteria in the IC or CC are summarized in the following tables:

#### **AROCLORS:**

Compound	CV 1/3/13
Aroclor-1254 (peak 2)	✕ (1)
Samples Affected:	A4A93, A4A93DL, A4A94, A4A94DL, A4A95, A4A95DL, A4A96, A4A96DL, A4A97, A4B00, A4B05-A4B08

Actions:

- ✕ = %RSD >20 or %D >15. Estimate (J) all positive results.  
(1) = Criteria failed on Column No. 1.

Sample results will be qualified as indicated above.

**PE Samples/Accuracy Check**

The criteria used by START for qualification of sample data based on the PE sample results are as follows:

PE Score	Action	
	Non-Detects	Positive Results
In Window	Accept	Accept
Warning Low/High	Accept	Accept
Action Low	Reject (R)	Estimate (J)
Action High	Accept	Estimate (J)
TCL Misses	Reject (R)	Varies
TCL Contaminants	Accept	Varies
TIC Misses	Varies	Varies
TIC Contaminants	Varies	Varies

All non-compliant PE scores were investigated by checking raw data, calculations, calibrations, possible matrix interferences, and blank contamination. Unless otherwise noted, all results reported by the laboratory were found to be correct, based on the data generated by the laboratory.

The laboratory properly identified and quantified the aqueous Aroclor-1254 PE sample (A4B03, PE No. AA3325). No qualifications were applied.

The laboratory properly identified and quantified the aqueous Aroclor-1242 PE sample (A4B04, PE No. AA2555). No qualifications were applied.

**Target Compound Identification**

The dual column correlation did not meet %D confirmation criteria for the following Aroclor compounds:

Sample	Compound	% D	Action
A4A96	Aroclor-1242	38.8	J
A4A96DL	Aroclor-1242	40	J

**Actions:**

- J = Estimate results when %D >25 but <100 for pesticides or %D >25 but <500 for PCBs.  
R = Reject results when %D >100 for pesticides or %D >500 for PCBs.  
U = Qualify result as undetected at the CRQL when %D >100 for pesticides or %D >500 for PCBs, and both results are less than the CRQL.

Sample results have been qualified as indicated above.

Ms. Martha Bosworth  
21 August 2013  
Page 5

Case 43392; SDG A4A90

Please contact the undersigned at (978) 552-2100 if you have any questions or need further information.

Very truly yours,

WESTON SOLUTIONS, INC.  
Region I START



William W. Mahany  
Principal Project Scientist



John Burton  
Lead Chemist

email cc: Jennifer Feranda (CLP PO - Region II) - DV Letter w/Data Tables, and ORDA Form only –  
[Feranda.jennifer@epa.gov](mailto:Feranda.jennifer@epa.gov)

Attachments: Table I: Overall Evaluation of Soil Data  
Data Summary Key  
Acronym List  
Data Summary Table 1  
DV Worksheets  
PE Sample Score Reports (included in DV worksheets)  
Field Sampling Notes (including a copy of sampler's COC Records)  
CSF Audit (DC-2 Form) - Evidence Audit Photocopy (Including CSF Receipt/Transfer Form)  
DQO Summary Form

S:\12100008\Analytical\Case\_43392\A4A90\A4A90\_val\_.doc

TABLE I

**JARD COMPANY INC**  
**Case No. 43392; SDG No. A4A90**

**Overall Evaluation of Aqueous Data**

AROCLOrS					
DQO (list all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability**	Potential Usability Issues
		Analytical Error	Sampling Error*		
1. Collect ground water samples from previously installed monitoring wells on and off the property for PCB (Aroclor) analysis, to document potential contamination in the groundwater associated with source areas located on the property.	<i>Analytical Method:</i>  Yes, SOM01.2  <i>Sampling Method:</i>  Yes, Bladders, Peristaltic.	Refer to qualifications in attached Data Summary Table 1.	Refer to qualifications in attached Data Summary Table 1.		None.

\* The evaluation of "sampling error" cannot be completely assessed in data validation.

\*\* Sampling variability is not assessed in data validation.

## DATA SUMMARY KEY ORGANIC DATA VALIDATION

- J = The associated numerical value is an estimated quantity.
- R = The data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification. The R replaces the numerical value or SQL.
- U = The compound was analyzed for, but not detected. The associated numerical value is the SQL or the adjusted SQL.
- UJ = The compound was analyzed for, but not detected. The associated numerical value is the estimated SQL.
- EB = The compound was identified in an aqueous EB that was used to assess field contamination associated with soil/sediment samples.
- TB = The compound was identified in an aqueous TB that was used to assess field contamination associated with soil/sediment samples.
- BB = The compound was identified in an aqueous BB that was used to assess field contamination associated with soil/sediment samples.

## ACRONYM LIST ORGANIC DATA VALIDATION

AQ	aqueous	SQL	Sample Quantitation Limit
AQ FB	aqueous field blank	S/S	soil/sediment
BB	Bottle Blank	S/S (m)	soil/sediment medium level
B/N	base/neutral compound	START	Superfund Technical Assessment and Response Team
°C	degrees Celsius	SVOC	semivolatile organic compound
CC	Continuing Calibration	SW	surface water
CCV	Continuing Calibration Verification	TB	Trip Blank
CLP	Contract Laboratory Program	TCL	Target Compound List
COC	Chain-of-Custody record	TDD	Technical Direction Document
COR	Contracting Officer Representative	TIC	Tentatively Identified Compound
CRQL	Contract Required Quantitation Limit	TR	Traffic Report
CSF	Complete SDG File	VOC	volatile organic compound
%D	percent difference	WESTON	Weston Solutions, Inc.
DAS	Delivery of Analytical Services		
DMC	Deuterated Monitoring Compound		
DQO	Data Quality Objective		
DV	Data Validation		
DW	drinking water		
EB	Equipment Blank		
EPA	Environmental Protection Agency		
GC/ECD	Gas Chromatograph/Electron Capture Detector		
GC/MS	Gas Chromatograph/Mass Spectrometry		
GW	groundwater		
IC	Initial Calibration		
IS	Internal Standard		
kg	kilogram		
L	liter		
LCS	Laboratory Control Sample		
LFB	Laboratory Fortified Blank		
MDL	Method Detection Limit		
µg	microgram		
MS	Matrix Spike		
MSD	Matrix Spike Duplicate		
NA	Not Applicable		
ND	non-detected result		
ng	nanogram		
NERL	New England Regional Laboratory		
OSC	On-Scene Coordinator		
ORDA	Organic Regional Data Assessment		
PAH	polynuclear aromatic hydrocarbon		
PCB	polychlorinated biphenyl compound		
PEST/PCB	pesticide/polychlorinated biphenyl compound		
PE	Performance Evaluation		
Pos	positive result		
QC	Quality Control		
%R	percent recovery		
RPD	Relative Percent Difference		
RRF	Relative Response Factor		
RSD	Relative Standard Deviation		
SDG	Sample Delivery Group		
SOW	Statement of Work		



SITE: JARD COMPANY INC  
CASE: 43392 SDG: A4A90  
LABORATORY: CHEMTECH  
CONSULTING GROUP

DATA SUMMARY TABLE 1  
AROCOR AQUEOUS ANALYSIS  
µg/L

SAMPLE NUMBER			A4A90	A4A91	A4A92	A4A93	A4A94	A4A95	A4A96
SAMPLE LOCATION			GW-01	GW-02	GW-03	GW-04	GW-05	GW-06	GW-07
STATION LOCATION			JCW-001	JCW-002	JCW-003	JCW-004	JCW-005	JCW-006	JCW-007
LABORATORY NUMBER			E1725-01	E1725-02	E1725-03	E1725-14	E1725-15	E1725-16	E1725-17
COMPOUND	MDL	CRQL							
Aroclor-1016	0.08	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1221	0.29	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1232	0.03	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242	0.03	1.0	1.0 U	1.0 U	1.0 U	93 *	180 *	98 *	26.0 *J
Aroclor-1248	0.02	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1254	0.05	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1260	0.04	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1262	0.2	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1268	0.06	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
DILUTION FACTOR			1.0	1.0	1.0	1.0 / 20*	1.0 / 20*	1.0 / 20*	1.0 / 5.0*
DATE SAMPLED			4/2/2013	4/2/2013	4/2/2013	4/2/2013	4/2/2013	4/2/2013	4/2/2013
DATE EXTRACTED			4/5/2013	4/5/2013	4/5/2013	4/5/2013	4/5/2013	4/5/2013	4/5/2013
DATE ANALYZED			4/5/2013	4/5/2013	4/5/2013	4/8/2013	4/8/2013	4/8/2013	4/8/2013
SAMPLE VOLUME (mL)			1000	1000	1000	1000	1000	1000	1000

NOTES: µg/L = micrograms per Liter  
MDL = Method Detection Limit  
CRQL = Contract Required Quantitation Limit  
U = Value is Non-Detected.  
UJ = Value is Non-Detected, and Detection Limit is Estimated.  
J = Value is Estimated.  
\* = Reported value is from diluted analysis.  
mL = milliliter

SITE: JARD COMPANY INC  
CASE: 43392 SDG: A4A90  
LABORATORY: CHEMTECH  
CONSULTING GROUP

DATA SUMMARY TABLE 1  
AROCOR AQUEOUS ANALYSIS  
µg/L

SAMPLE NUMBER			A4A97	A4A98	A4A99	A4B00	A4B01	A4B02	A4B05
SAMPLE LOCATION			GW-08	GW-09	GW-10	GW-11	RB-20	RB-01	RB-02
STATION LOCATION			JCW-008	JCW-009	JCW-010	JCW-011	JCW-012	JCW-013	JCW-016
LABORATORY NUMBER			E1725-04	E1725-05	E1725-06	E1725-09	E1725-10	E1725-11	E1725-18
COMPOUND	MDL	CRQL							
Aroclor-1016	0.08	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1221	0.29	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1232	0.03	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242	0.03	1.0	9.0	1.0 U	1.0 U	9.4	1.0 U	1.0 U	1.0 U
Aroclor-1248	0.02	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1254	0.05	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1260	0.04	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1262	0.2	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1268	0.06	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
DILUTION FACTOR			1.0	1.0	1.0	1.0	1.0	1.0	1.0
DATE SAMPLED			4/2/2013	4/2/2013	4/2/2013	4/2/2013	4/2/2013	4/1/2013	4/3/2013
DATE EXTRACTED			4/5/2013	4/5/2013	4/5/2013	4/5/2013	4/5/2013	4/5/2013	4/8/2013
DATE ANALYZED			4/8/2013	4/5/2013	4/5/2013	4/8/2013	4/5/2013	4/5/2013	4/8/2013
SAMPLE VOLUME (mL)			1000	1000	1000	1000	1000	1000	1000

NOTES: µg/L = micrograms per Liter  
MDL= Method Detection Limit  
CRQL = Contract Required Quantitation Limit  
U = Value is Non-Detected.  
UJ = Value is Non-Detected, and Detection Limit is Estimated.  
J = Value is Estimated.  
\* = Reported value is from diluted analysis.  
mL = milliLiter

SITE: JARD COMPANY INC  
CASE: 43392 SDG: A4A90  
LABORATORY: CHEMTECH  
CONSULTING GROUP

DATA SUMMARY TABLE 1  
AROCOR AQUEOUS ANALYSIS  
µg/L

SAMPLE NUMBER			A4B06	A4B07	A4B08			
SAMPLE LOCATION			RB-03	RB-04	RB-05			
STATION LOCATION			JCW-017	JCW-018	JCW-019			
LABORATORY NUMBER			E1725-19	E1725-20	E1725-21			
COMPOUND	MDL	CRQL						
Aroclor-1016	0.08	1.0	1.0 U	1.0 U	1.0 U			
Aroclor-1221	0.29	1.0	1.0 U	1.0 U	1.0 U			
Aroclor-1232	0.03	1.0	1.0 U	1.0 U	1.0 U			
Aroclor-1242	0.03	1.0	1.0 U	1.0 U	1.0 U			
Aroclor-1248	0.02	1.0	1.0 U	1.0 U	1.0 U			
Aroclor-1254	0.05	1.0	1.0 U	1.0 U	1.0 U			
Aroclor-1260	0.04	1.0	1.0 U	1.0 U	1.0 U			
Aroclor-1262	0.2	1.0	1.0 U	1.0 U	1.0 U			
Aroclor-1268	0.06	1.0	1.0 U	1.0 U	1.0 U			
DILUTION FACTOR			1.0	1.0	1.0			
DATE SAMPLED			4/4/2013	4/4/2013	4/5/2013			
DATE EXTRACTED			4/8/2013	4/8/2013	4/8/2013			
DATE ANALYZED			4/8/2013	4/8/2013	4/8/2013			
SAMPLE VOLUME (mL)			1000	1000	1000			

NOTES: µg/L = micrograms per Liter  
MDL = Method Detection Limit  
CRQL = Contract Required Quantitation Limit  
U = Value is Non-Detected.  
UJ = Value is Non-Detected, and Detection Limit is Estimated.  
J = Value is Estimated.  
\* = Reported value is from diluted analysis.  
mL = milliliter

# REGION I, EPA-NE ORGANIC REGIONAL DATA ASSESSMENT (ORDA)\*

Case No.: 43392

Site Name: JARD

SDG No.: A4A90

No. of Samples/Matrix: 17/ AQ

Lab Name: Chemtech Consulting Group

Validation Contract WESTON

SOW#/Contract#: SOM01.2

Validator's Name: J. Burton

EPA-NE DV Tier Level: Tier II

Date DP Rec'd by EPA-NE:

TPO/PO: \*\*ACTION \_\_\_\_\_ FYI ✓

DV Completion Date: 5/1/13

## ANALYTICAL DATA QUALITY SUMMARY

1. Preservation and Contractual Holding Times:
2. GC/MS / GC/ECD Instrument Performance Check:
3. Initial Calibration:
4. Continuing Calibration:
5. Blanks:
6. DMCs or Surrogate Compounds:
7. Internal Standards:
8. Matrix Spike/Matrix Spike Duplicate:
9. Sensitivity Check:
10. PE samples - Accuracy Check:
11. Target Compound Identification:
12. Compound Quantitation and Reported QLs:
13. Tentatively Identified Compounds:
14. Semivolatile Cleanup/Pesticide/PCB Cleanup:
15. Data Completeness:
16. Overall Evaluation of Data:

[illegible]

o = Data had no problems or were qualified due to minor contractual problems.

m = Data were qualified due to major contractual problems.

z = Data were rejected as unusable due to major contractual problems.

**Action Items (z items):**

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**Areas of Concern (m items):**

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**Comments:**

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\*This form assesses the analytical data quality in items of contractual compliance only. It does not assess sampling errors and/or non-contractual analytical issues that affect data quality.

\*\* Check "ACTION" only if contractual defects resulted in reduced payment/data rejection recommendations.

Validator: JCBenton

Date: 5/1/13

Site Name: JARD  
TDD No.: D-10-0008  
Task No.: 0850

REGION I ORGANIC DATA VALIDATION

The following data package has been validated:

Lab Name: Chemtech Consulting

SOW #/Contract #: SOM01.2

Case No.: 43392

Sampling Dates: 4/1-4/5/13

SDG No.: A4A90

Shipping Dates: 4/3/13, 4/5/13

No. of Samples/Matrix: 17/AQ

Date Rec'd by Lab: 4/4/13, 4/6/13

Traffic Report Sample Nos: A4A90-A4A99, A4B00-A4B02, A4B05-A4B08

Trip Blank No.: NA

Equipment Blank No: A4B01, A4B02, A4B05-A4B08

Field Duplicate Nos: (A4A97/A4B00)

PE Nos: A4B03, A4B04

The Region I, EPA - NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, revision 12/96 was used to evaluate the data and/or approved modifications to the EPA - NE Functional Guidelines were used to evaluate the data and are attached to this cover page: (attached modified criteria from EPA approved QAPjP or amendment to the QAPjP).

A Tier II or a Tier III evaluation was used to validate the data. If a Tier II validation with a partial Tier III was used, then identify samples, parameters, etc. that received partial Tier III validation:

The data were evaluated based upon the following parameters:

- |   |  |
|---|--|
| - Overall Evaluation of Data                    | - Field Duplicates                                       |
| - Data Completeness (CSF Audit - Tier I)        | - Sensitivity Check                                      |
| - Preservation and Technical Holding Times      | - PE Samples/Accuracy Check                              |
| - GC/MS and GC/ECD Instrument Performance Check | - Target Compound Identification                         |
| - Initial and Continuing Calibrations           | - Compound Quantitation and Reported Quantitation Limits |
| - Blanks  | - TICs   |
| - Surrogate Compounds                           | - Semivolatile and Pesticide/PCB Cleanup                 |
| - Internal Standards                            | - System Performance                                     |
| - Matrix Spike/Matrix Spike Duplicate           |  |

Region I Definitions and Qualifiers:

A - Acceptable Data

J - Numerical value associated with compound is an estimated quantity.

R - The data are rejected as unusable. The R replaces the numerical value or sample quantitation limit.

U - Compound not detected at that numerical sample quantitation limit.

UJ - The sample quantitation limit is an estimated quantity.

TB, EB - Compound detected in aqueous trip blank or aqueous equipment blank associated with soil/sediment samples.

Validator's Name: J. Buxton Company Name: WESTON Phone Number: 978-552-2100

Date Validation Started: 4/29/13 Date Validation Completed: 5/1/13

Check if all criteria are met and no hard copy worksheet provided. Indicate NA if worksheet is not applicable to analytical method. Note: There is no standard worksheet for System Performance, however, the validator must document all system performance issues in the Data Validation Memorandum.

VOA/SV Worksheets:

VOA/SV-Pest/PCB	COMPLETE SDG FILE (CSF) AUDIT	@
VOA/SV-Pest/PCB-I	PRESERVATION AND HOLDING TIMES	NA
VOA/SV-II	GC/MS INSTRUMENT PERFORMANCE CHECK (TUNING)	NA
VOA/SV-III	INITIAL CALIBRATION	NA
VOA/SV-IV	CONTINUING CALIBRATION	↓
VOA/SV-Pest/PCB-V-A	BLANK ANALYSIS	NA
VOA/SV-Pest/PCB-V-B	BLANK ANALYSIS	↓
VOA-VI	VOA SURROGATE SPIKE RECOVERIES	NA
SV-VI	SV SURROGATE SPIKE RECOVERIES	NA
VOA/SV-VII	INTERNAL STANDARD PERFORMANCE	NA
VOA/SV-Pest/PCB-VIII	MATRIX SPIKE/MATRIX SPIKE DUPLICATE	↓
VOA/SV-Pest/PCB-IX	FIELD DUPLICATE PRECISION	↓
VOA/SV-Pest/PCB-X	SENSITIVITY CHECK	NA
VOA/SV-Pest/PCB-XI	ACCURACY CHECK/ PE SCORE SHEETS	@
VOA/SV-Pest/PCB-XII	TARGET COMPOUND IDENTIFICATION	NA
VOA/SV-Pest/PCB-XIII	SAMPLE QUANTITATION	↓
VOA/SV-XIV	TENTATIVELY IDENTIFIED COMPOUNDS	NA
VOA/SV-XV	SEMIVOLATILE CLEANUP	NA
TABLE II - WORKSHEET	OVERALL EVALUATION OF DATA	*

Pest/ARO Worksheets:

VOA/SV-Pest/PCB	COMPLETE SDG FILE (CSF) AUDIT	@
VOA/SV-Pest/PCB-I	PRESERVATION AND HOLDING TIMES	@
Pest/PCB-IIA	GC/ECD INSTRUMENT PERFORMANCE CHECK- RESOLUTION	NA
Pest/PCB-IIB	GC/ECD INSTRUMENT PERFORMANCE CHECK- RETENTION TIMES	✓
Pest/PCB-IIC	GC/ECD INSTRUMENT PERFORMANCE CHECK- ACCURACY CHECK OF INITIAL CALIBRATION	
Pest/PCB-IID	GC/ECD INSTRUMENT PERFORMANCE CHECK- PESTICIDE DEGRADATION	NA
Pest/PCB-III	INITIAL CALIBRATION	✓
Pest/PCB-IV	CONTINUING CALIBRATION	
VOA/SV-Pest/PCB-V-A	BLANK ANALYSIS	
VOA/SV-Pest/PCB-V-B	BLANK ANALYSIS	
Pest/PCB-VI	SURROGATE COMPOUNDS: SPIKE RECOVERIES AND RETENTION TIME SHIFT	✓
Pest/PCB-VII	PESTICIDE CLEANUP	NA
VOA/SV-Pest/PCB-VIII	MATRIX SPIKE/MATRIX SPIKE DUPLICATE	✓
VOA/SV-Pest/PCB-IX	FIELD DUPLICATE PRECISION	✓
VOA/SV-Pest/PCB-X	SENSITIVITY CHECK	NA
VOA/SV-Pest/PCB-XI	ACCURACY CHECK/ PE SCORE SHEETS	@
Pest/PCB-XII	COMPOUND IDENTIFICATION	
VOA/SV-Pest/PCB-XIII	SAMPLE QUANTITATION	
TABLE II - WORKSHEET	OVERALL EVALUATION OF DATA	*

I certify that all criteria were met for the worksheets checked above.

@ - always included

\* - See DV Memo

Signature: John Burton

Name: John Burton

Date: 5/1/13


## COMPLETE SDG FILE (CSF) AUDIT

Organic Fractions: SDG: A4A90

### Missing Information

Date Lab ContactedDate Received

None

Validator: 

Date: 5/1/13



Sampler: G. HarnoK

Company: WESTON

Contacted: Yes No Date: \_\_\_\_\_

# 1. PRESERVATION AND HOLDING TIMES

Circle sample numbers with exceeded technical holding times or omitted preservation.  
List all required preservation codes and circle omitted preservation codes.  
Circle all exceeded technical holding times.  
Identify extraction technique after "# of Days"/(\*Extraction Code).

Cooler Temp: 4-5° Documented: Page: 380-392

Sample No. (TR No.)	Matrix	Pres. Code	Date Sampled	PEST						ARO					
				Date Extracted	# of Days from Samp. to Ext.	*Ext. Code	Date Analyzed	# of Days from Ext. to Anal.	Action	Date Extracted	# of Days from Samp. to Ext.	*Ext. Code	Date Analyzed	# of Days from Ext. to Anal.	Action
A4A90	AQ	1, 3	4/3/13							4/5/13	3	SEP	4/5/13	0	None
A4A91			4/4/13							↓			↓	0	
A4A92										↓			↓	0	
A4A93										4/5/13			4/8/13	3	
A4A94										↓			↓		
A4A95										↓			↓		
A4A96										↓			↓		
A4A97										4/5/13			4/5/13	0	
A4A98										↓			↓	0	
A4A99										4/5/13			4/6/13	3	
A4B00										4/5/13			4/5/13	0	
A4B01	AQFB									↓			↓		
A4B02			4/1/13							4/8/13	5		4/8/13		
A4B05			4/3/13							↓			↓		
A4B06			4/4/13							↓			↓		
A4B07										↓			↓		
A4B08			4/5/13							↓			↓		
A4B03	PE		4/3/13							4/5/13	5		4/5/13		
A4B04										↓			↓		

## Preservation Code:

- Cool @ 4°C (± 2°C)
- Preserve with HCl to ≤ pH 2.
- Protect from light.
- Freeze.
- Room temperature (avoid excessive heat).
- Encore sampler (48 hour hold time).

## \*Extraction Code:

- L/L - Liquid/Liquid  
SON - Sonication  
SEP - Separatory funnel  
SOX - Soxhlet  
SPE - Solid Phase Extraction

## Action Code:

- J - Estimate (J) detected values.  
UJ - Estimate (UJ) non-detected values.  
R - Reject (R) non-detected values.

## Matrix Codes:

- AQ - Aqueous  
S/S - Soil/Sediment  
AQ FB - Aqueous Field Blank

Validator: J. Burton

Date: 4/29/13

EPA-NE - Data Validation Worksheet  
VOA/SV - Pest/ARO - V

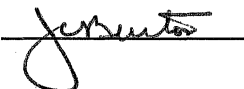
V. Rinsate Blank Tabulation - list the applicable rinsate (equipment) blanks below:

Rinsate Blank No.	Sample No.	Equipment Rinsed to Generate the RB	Matrix Applies to:
RB- 20	A4B01	bladder pumps	GW-01, GW-02
RB-			GW-05, GW-07, GW-08
RB-			GW-09, GW-10, GW-11
RB-			
RB-			
RB-			

Matrix Codes: SS - surface soil  
SD - sediment  
SO - source soil  
SB - soil boring  
GW - groundwater  
DW - drinking water  
SW - surface water

Note: Apply each RB only to the matrix to which it corresponds. For example, apply the hand auger RB to the soil samples, but not to the surface water samples.

If more than one hand auger/soil sample RB was collected, the RBs may be batched and the highest hit from the batch used to determine the action levels. However, if one RB exhibits an unusual amount of contamination, apply this RB to only the associated samples. Do not batch this RB and apply to all samples of the same matrix.

Validator: 

Date: 4/29/13





EPA-NE - Data Validation Worksheet  
VOA/SV - Pest/ARO - V- B1

## V. BLANK ANALYSIS

## 3. Blank Actions:

Actions Apply to Aqueous (AQ) Samples

Compound	Blank with Max. Conc.	Date Blank Sampled/ Analyzed	Max. Conc. (ug/L)	Action Level (ug/L)	Sample QL (ug/L)	Samples Affected	Action
Blanks ND	Lab					AQ FB	U
	Lab					"	U
	Lab					"	U
	Lab					"	U
	Lab					"	U
	Lab					"	U
	Lab					"	U
	Lab					"	U
	Lab					"	U
	Lab					"	U
	Lab					"	U
	Lab					"	U
	Lab					"	U
	Lab					"	U
	Lab					"	U
	Lab					"	U
Blanks ND	Lab, Equip, or Trip*					AQ Field Samples	U
	Lab, Equip, or Trip*					(SW, GW,	U
	Lab, Equip, or Trip*					MW, DW, etc.)	U
	Lab, Equip, or Trip*					"	U
	Lab, Equip, or Trip*					"	U
	Lab, Equip, or Trip*					"	U
	Lab, Equip, or Trip*					"	U
	Lab, Equip, or Trip*					"	U
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	Lab, Equip, or Trip*					"	U
	Lab, Equip, or Trip*					"	U
	Lab, Equip, or Trip*					"	U
	Lab, Equip, or Trip*					"	U
	Lab, Equip, or Trip*					"	U

\* - Circle one

Validator: JC BurtDate: 4/29/13**Applicable Lab Blanks Include:**

MB - Method Blanks  
 HB - Holding Blanks  
 IB - Instrument Blanks  
 SB - Storage Blanks  
 CUB- Cleanup Blank

**AQ FB Include:**

Equip - Equipment Blank (rinsate)  
 Trip - Trip Blank

**AQ Field Samples Include:**

SW - Surface Waters  
 GW - Groundwaters  
 MW - Monitoring Wells  
 DW - Drinking Waters

Comments:

### 3. Blank Actions:

### **Actions Apply to Soil/Sediment (S/S) or Solid Samples**

**Applicable Lab Blanks Include:**

MB - Method Blanks  
HB - Holding Blanks  
IB - Instrument Blanks  
SB - Storage Blanks  
CUB- Cleanup Blank

**FB Include:**

Equip - Equipment Blank (rinsate)  
Trip - Trip Blank  
NaHSO<sub>4</sub> - Sodium Bisulfate  
MeOH - Methanol

Comments:

J. Bunter

4/29/13

\* - Circle one

\* - Circle one



# PES SCORING EVALUATION REPORT

PES AA3325

Rev: 1      EPA Sample No.: A4B03

Report Date: 04/26/2013

Page 1 of 1

Lab Name: Chemtech Consulting Group

Contract: EPW11030

SDG No.: A4A90

Lab File ID: PO008358.D

Date Analyzed: 04/08/2013

Decanted: N/A

Injection Vol. (uL): 1.0

Sulfur Cleanup: No

Case No.: 43392

Matrix: Water

Date Received: 04/04/20132

Sample Wt./Vol. (g/mL): 1000.0 mL

Extraction Type: SEPF

GPC Cleanup: No

Dilution Factor: 1.0

Lab Code: CHEM

SAS/Client No.: NA

Lab Sample ID: E1725-12

Date Extracted: 04/05/2013

% Moisture: NA

Conc. Extract Vol. (uL): 10000

pH: NA

Units: ug/L

Analysis Method: SOM01.2

Scoring Method: SOM01.2

Comments:

[illegible]

Property of U.S. Environmental Protection Agency - Score PES v1.12b



# PES SCORING EVALUATION REPORT

Rev: 1      EPA Sample No.: A4B04

Page 1 of 1

Lab Code: CHEM

Case No.: 43392

SAS/Client No.: NA

Matrix: Water

Lab Sample ID: E1725-13

Date Received: 04/04/20132

Date Extracted: 04/05/2013

Sample Wt./Vol. (g/mL): 1000 mL

% Moisture: NA

Extraction Type: SEPF

Conc. Extract Vol. (uL): 10000

GPC Cleanup: No

pH: NA

Dilution Factor: 1.0

Units: ug/L

Scoring Method: SOM01.2

Comments:

[illegible]

Property of U.S. Environmental Protection Agency - Score PES.v1.12b

List the percent recoveries which do not meet the method QC acceptance criteria.

TCX - Tetrachloro-m-xylene      DCB - Decachlorobiphenyl

**Qualification of data:**

- LL - Lower Limit                      UL - Upper Limit

J. C. Benton

Date: 4/29/13

## Continuing Calibration - PEM, INDC

List the compounds which did not meet the percent difference (%D) criteria of < 25% on either column (PEST), ≤ 15% (PCB).

[illegible]

Estimate (J) all positive results when the %D >25% Pest, or  $\geq 15\%$  PCB. No qualification is required for non-detected results.

Date:

Case: 43392  
SDG: A4A90

Site Name: JARD  
Page 1 of    

[illegible]

Use Comments section to list compounds that went to "U" due to Blank Contamination Actions or Co-elution with Aroclors.

**Actions:**

- J - Estimate results when %D > 25% but ≤100% for pesticides or %D >25% but ≤500% for PCBs.  
 J@ - %D >25% but ≤100% for pesticides or %D > 25% but ≤500% for PCBs. Previously qualified as estimated by laboratory due to quantitation below the quantitation limit. No further qualification is needed.  
 R - Reject results when %D >100 for pesticides or %D >500% for PCBs.  
 U - Qualify result as undetected at the CRQL when %D >100% for pesticides or %D >500% for PCBs and both results are < the CRQL.  
 U\* - Report the non-detected result from the diluted analysis.  
 U^ - Compound not confirmed by GC/MS. Raise detection limit to reported concentration.  
 DL - Report the result from the diluted analysis.

Validator: J. Benton

Date: 4/29/13

- 107, MW-2, MW-3, MW-3D, MW-6, MW-6D, MW-9D, and MW-11. Based on the above information, START personnel planned to purge/develop monitoring wells MW-2, MW-3, MW-3D, MW-6, and MW-6D on 28 March 2013.
- 1630 hrs: START personnel marked properties located along Park Street and Bowen Road for Dig Safe notification. Following dig safe marking; START personnel secured and departed the site.

**28 March 2013 (Thursday) – Site Reconnaissance, Well Development**

Weather: Cloudy, high 30 to low 40 °F

- 0700 hrs: START members Kelly, Hornok, Bitzas, and Robinson arrived at the Jard property. START members completed calibration checks on air monitoring instrument; MultiRAE Plus, LEL, O<sub>2</sub>, H<sub>2</sub>S, CO, and PID meter. Background ambient readings: LEL = 0%; O<sub>2</sub> = 20.9%; H<sub>2</sub>S = 0 ppm; CO = 0 ppm; and VOC = 0 ppm.
- 0715 hrs: START HSC Kelly reviewed the site HASP and conducted a tailgate health and safety meeting for all on-site START personnel, including reviews of the physical hazards (uneven terrain, trips-slips-falls, potential weather issues), chemical hazards [PCBs, non-aqueous phase liquids (NAPL) containing water], Radiation (Not encountered previously) and biological hazards (ticks, poison ivy, animals). Personnel reviewed and signed the HASP documentation, as needed.
- 0800 hrs: START personnel began purging/developing the selected ground water monitoring wells using a Wattera inertia pump system with dedicated tubing, check valve, and surge block at each well. START personnel established on site investigative derived waste (IDW) staging area along west side of Source Pile, on asphalt pavement area/driveway. Location will allow truck for IDW pickup to enter and exit site easily. Staging area consists of 55-gallon drums placed on wooden pallets.
- 0900 hrs: START PL. Kelly discussed with CORs Bosworth and Smith regarding status of the monitoring well examination, and selection of wells to be purged and sampled. CORs agreed with selection of wells to be sampled.
- START personnel continued well purging operations. For the monitoring wells selected for redevelopment/purging, the purge volume in approximate (~) gallons is listed for each well. The following ~ volumes of ground water and/or material were purged from the groundwater wells listed above: MW-2: ~10 gallons; MW-3: ~10 gallons; MW-3D: ~20 gallons; MW-6: ~5 gallons; and MW-6D: ~ 30 gallons. Approximately 4.5 feet of silt material was removed from ground water monitoring well MW-6D. In addition, a very thin NAPL with a greasy feel, along with black oil-like droplets, and a rainbow sheen were observed in IDW purge water removed from MW-3, MW-3D, and MW-6D.
- 1330 hrs: START personnel secured the groundwater monitoring well IDW purge water drums, secured the site and departed the Jard property.

**1 April 2013 (Monday) – Soil/Source Sampling**

Weather: Cloudy, some rain, 45 to 50 °F

- 1045 hrs: START members Kelly, Hornok, Bitzas, Imbrés, Robinson, and Jonathan Saylor arrived at the Jard property.
- 1100 hrs: START HSC Kelly reviewed the site HASP and conducted a tailgate health and safety meeting for all on-site START personnel, including reviews of the physical hazards (uneven terrain, trips-slips-falls, heavy lifting, Geoprobe Work concerns, potential adverse weather conditions), chemical hazards (PCBs), Radiation (Not encountered previously but will be monitored) and biological hazards (ticks, poison ivy, animals). Personnel reviewed and signed

the HASP documentation, as needed. START members completed calibration checks on air monitoring instrument; MultiRAE Plus, LEL, O<sub>2</sub>, H<sub>2</sub>S, CO, and PID meter. Background ambient readings: LEL = 0%; O<sub>2</sub> = 20.9%; H<sub>2</sub>S = 0 ppm; CO = 0 ppm; and VOC = 0 ppm.

START Team established decontamination area.

- 1115 hrs: START personnel began decontaminating non-dedicated field sampling equipment including Geoprobe macrocores and cutting shoes, hand augers, metal scoops, and low-flow bladder pumps. Non-dedicated equipment (Geoprobe equipment, augers, metal scoops, etc.) will be decontaminated after the collection of each sample, and prior to use for the collection of other samples.
- 1400 hrs: Began soil boring activities with the Geoprobe at soil boring location SB-01 located on the south-central area of the former building footprint in an area previously excavated during an EPA Removal action. An EPA removal action was completed at the site during 2007 where the building was razed, a portion of the concrete foundation was removed, and a permeable earthen cap was installed to limit exposure to contaminated soils. Boring activities as part of the Site Reassessment were targeted at the area of the foundation removal and soil excavation (southern portion of the former building footprint).
- Sampling on the Jard property and surrounding properties for solid matrices (soil/source, surface soil, and sediment) will be conducted as follows, unless otherwise noted: locations will be designated prior to initiation of sampling activities; at each location, sampling depth will be determined based on sampling objectives and/or materials encountered; for each sampled depth interval at each location, material will be placed in a large polyethylene bag (12 by 15 inches); the material will then be homogenized completely in the bag; the material will later be described by a licensed professional-geologist using the modified Burmister soil classification system and a small sample aliquot will be collected for PCB field screening analysis performed by the US EPA Mobile Laboratory personnel; based on field screening results and sampling objectives, a subset of samples will be selected for further analysis via Contract Laboratory Program (CLP) Aroclor analysis; samples selected for CLP analysis will be aliquoted with sufficient quality assurance/quality control (QA/QC) volume; all solid matrix samples submitted for CLP Aroclor analysis will also be aliquoted for potential congener analysis, unless otherwise noted; following receipt of CLP Aroclor analytical results, a smaller subset of samples will then be selected and submitted for congener analysis. A separate field data sheet will be completed by the field sampler for each sample collected to document relevant information and to supplement field logbook notes.
- Additional START personnel performed bump checks on calibrated YSI 550 pH/oxidation reduction potential (ORP)/Conductivity probes for ground water sampling scheduled to be completed on 2 April 2013. All the calibrated ground water sampling equipment was working properly (See calibration log sheets).
- 1415 hrs: Soil/source sample SB-01A (Sample #: JCS-128) was collected using a Geoprobe macrocore from a depth of 2.7 to 4 feet bgs from soil boring SB-01 and later submitted for PCB field screening analysis.
- 1420 hrs: Soil/source sample SB-01B (Sample #: JCS-129) was collected using a Geoprobe macrocore from a depth of 6.9 to 8 feet bgs from soil boring SB-01 and later submitted for PCB field screening analysis.
- 1430 hrs: Soil/source sample SB-01C (Sample #: JCS-130) was collected using a Geoprobe macrocore from a depth of 10.4 to 12 feet bgs from soil boring SB-01 and later submitted for PCB field screening analysis.
- 1440 hrs: Soil/source sample SB-01D (Sample #: JCS-131) was collected using a Geoprobe macrocore from a depth of 12 to 14 feet bgs from soil boring SB-01 and later submitted for PCB field screening analysis.

- 1500 hrs: START personnel completed soil boring activities at location SB-01. Soil boring SB-01 was completed to a depth of 14 feet bgs due to refusal. See the soil Boring Logs for complete descriptions of the boring completed. The soil boring was backfilled with sand and bentonite. START personnel relocated to and began boring activities at soil boring location SB-02 located on the south-central area of the former building footprint in an area previously excavated during an EPA Removal action.
- 1520 hrs: Soil/source sample SB-02A (Sample #: JCS-132) was collected using a Geoprobe macrocore from a depth of 2.2 to 4 feet bgs from soil boring SB-02 and later submitted for PCB field screening analysis.
- 1530 hrs: Soil/source sample SB-02B (Sample #: JCS-133) was collected using a Geoprobe macrocore from a depth of 6.9 to 8 feet bgs from soil boring SB-02 and later submitted for PCB field screening analysis.
- 1540 hrs: Soil/source sample SB-02C (Sample #: JCS-134) was collected using a Geoprobe macrocore from a depth of 8.8 to 10 feet bgs from soil boring SB-02 and later submitted for PCB field screening analysis.
- 1545 hrs: START personnel completed soil boring activities at location SB-02. Soil boring SB-02 was completed to a depth of 10 feet bgs due to refusal. Evidence (piece of) the orange snow fence layer installed as part of the earthen cap construction was encountered at 2.5 feet bgs. See the soil Boring Logs for complete descriptions of the boring completed. The soil boring was backfilled with sand and bentonite. START personnel relocated to and began boring activities at soil boring location SB-03, located on the south-central capped area, adjacent to ground water monitoring wells MW-3 and MW-3D.
- 1555 hrs: Soil/source sample SB-03A (Sample #: JCS-135) was collected using a Geoprobe macrocore from a depth of 0.7 to 2.6 feet bgs from soil boring SB-03 and later submitted for PCB field screening analysis.
- 1605 hrs: Soil/source sample SB-03B (Sample #: JCS-136) was collected using a Geoprobe macrocore from a depth of 4.8 to 6.5 feet bgs from soil boring SB-03 and later submitted for PCB field screening analysis.
- 1610 hrs: START personnel completed soil boring activities at location SB-03. Soil boring SB-03 was completed to a depth of 6.5 feet bgs due to refusal. The soil boring was backfilled with sand and bentonite. START personnel completed soil boring activities for the day.
- 1630 hrs: Equipment rinsate blank sample RB-01 (Sample #: JCW-013; CLP #: A4B02) was collected from the Geoprobe macrocore system sampling equipment and is associated with soil/source sampling activities conducted on 1 April 2013.
- 1700 hrs: START personnel secured the site and departed the Jard property.

## 2 April 2013 (Tuesday) – Ground Water Sampling

Weather: Cloudy, little precipitation, low 30 °F

- 0700 hrs: START members Kelly, Hornok, Bitzas, Imbres, Robinson, and Saylor arrived at the Jard property.
- 0715 hrs: START HSC Kelly HSC Kelly reviewed the site HASP and conducted a tailgate health and safety meeting for all on-site START personnel, including reviews of the physical hazards (uneven terrain, trips-slips-falls, potential weather issues), chemical hazards [PCBs, non-aqueous phase liquids (NAPL) containing water], Radiation (Not encountered previously) and biological hazards (ticks, poison ivy, animals). Personnel reviewed and signed the HASP documentation, as needed. START members completed calibration checks on air monitoring instrument; MultiRAE Plus, LEL, O<sub>2</sub>, H<sub>2</sub>S, CO, and PID meter. Background ambient readings: LEL = 0%; O<sub>2</sub> = 20.9%; H<sub>2</sub>S = 0 ppm; CO = 0 ppm; and VOC = 0 ppm. Note that the ground

water monitoring equipment was calibrated on 1 April 2013 and bump-tested on 2 April 2013, and determined to be with calibration specifications (see calibration sheets).

START Team established decontamination area and conduct decontamination of non-dedicated equipment. Non-dedicated equipment (bladder pumps, measuring tapes, etc.) will be decontaminated after the collection of each sample, and prior to use for the collection of other samples.

- 0830 hrs: START member Bitzas began monitoring of low-flow parameters at ground water monitoring well EPA-104D located in the wetland area, west of Park Street and downgradient from the Jard property, behind the residential properties. START member Bitzas monitored low-flow ground water parameters per the Site-Specific Quality Assurance project Plan (QAPP) and START standard operating procedures (SOPs). See the field data sheets for more information.
- 0905 hrs: START member Saylor began monitoring of low-flow parameters at ground water monitoring well MW-11 located northwest of the Jard property. START member Saylor monitored low-flow ground water parameters per the Site-specific QAPP and START SOPs. See the field data sheets for more information.
- 0920 hrs: Stabilization of water quality parameters was achieved and ground water sample GW-10 [Matrix Spike/Matrix Spike Duplicate (MS/MSD)] (Sample #: JCW-010; CLP #: A4A99) was collected from monitoring well EPA-104D. Ground water sample GW-10 was collected using a bladder pump and the final water quality parameters were as follows: Temperature = 3.74 degrees Celsius (°C); Specific Conductivity = 91 micro Siemens per centimeter (µS/cm); pH = 5.72; ORP = 229.3 millivolts (mv); Dissolved Oxygen (DO) = 9.11 milligrams per liter (mg/L); and turbidity = 21.2 Nephelometric Turbidity Units (NTU). Note: Due to a YSI 550 probe malfunction, an additional volume of sample was collected for pH and ORP measurements using a second YSI 550. In addition, pH was monitored during low-flow activities with pH paper. Readings on pH paper indicated a pH between 5.0 and 6.0. A total of approximately 13.5 liters was purged prior to sample collection with the pump intake at 20.0 ft below the TOC. See the field data sheets for more information.
- 0940 hrs: START member Imbres began monitoring of low-flow parameters at ground water monitoring well EPA-107 located northwest of the Jard property. START member Imbres monitored low-flow ground water parameters per the Site-specific QAPP and START SOPs. See the field data sheets for more information.
- 1000 hrs: START member Robinson began monitoring of low-flow parameters at ground water monitoring well MW-9D located west of the Jard property. START member Robinson monitored low-flow ground water parameters per the Site-specific QAPP and START SOPs. See the field data sheets for more information.
- 1030 hrs: Stabilization of water quality parameters was achieved and ground water sample GW-02 (Sample #: JCW-002; CLP #: A4A91) was collected from monitoring well EPA-107. Ground water sample GW-02 was collected using a bladder pump and the final water quality parameters were as follows: Temperature = 5.14 °C; Specific Conductivity = 162 µS/cm; pH = 7.12; ORP = 192.9 mv; DO = 4.40 mg/L; and turbidity = 0.51 NTU. A total of approximately 11.0 liters was purged prior to sample collection with the pump intake at 17 ft. below the TOC.
- 1110 hrs: Stabilization of water quality parameters was achieved and ground water sample GW-09 (Sample #: JCW-009; CLP #: A4A98) was collected from monitoring well MW-11. Ground water sample GW-09 was collected using a bladder pump and the final water quality parameters were as follows: Temperature = 3.42 °C; Specific Conductivity = 55 µS/cm; pH = 6.34; ORP = 138.6 mv; DO = 11.41 mg/L; and turbidity = 10.3 NTU. A total of approximately 61.7 liters was purged prior to sample collection with the pump intake at 6.5 ft. below the TOC. The turbidity meter initially used to evaluate low-flow ground water parameters compliance malfunctioned and was replaced with one that was operational.



- 1125 hrs: Stabilization of water quality parameters was achieved and groundwater sample GW-08 (Sample #: JCW-008; CLP #: A4A97) and field duplicate GW-11 (Sample #: JCW-011; CLP #: A4B00) were collected from monitoring well MW-9D located west of the Jard property. Ground water samples GW-08 and GW-11 were collected using a bladder pump and the final water quality parameters were as follows: Temperature = 6.52 °C; Specific Conductivity = 44 µS/cm; pH = 6.29; ORP = 25.2 mv; DO = 0.13 mg/L; and turbidity = 34.2 NTU. A total of approximately 17 liters was purged prior to sample collection with the pump intake at 24 ft below the TOC. An issue was encountered with the turbidity meter during low-flow ground water monitoring, and was replaced with one that was operating.
- 1200 hrs: pH and ORP measurements were collected from a volume of water from ground water sample GW-10 and were as follows: pH = 5.72; ORP = 229.3 mv.
- 1250 hrs: START member Imbres began monitoring of low-flow parameters at ground water monitoring well EPA-100 located north of the Jard property. START member Imbres monitored all low-flow ground water parameters per the Site-specific QAPP and START SOPs. See the field data sheets for more information.
- 1310 hrs: START member Bitzas began monitoring of low-flow parameters at ground water monitoring well MW-2 located on the southern portion of the Jard property. START member Bitzas monitored all low-flow ground water parameters per the Site-specific QAPP and START SOPs. See the field data sheets for more information.
- 1345 hrs: START member Saylor began monitoring of low-flow parameters at ground water monitoring well MW-3D located directly south of the former building footprint on the southern portion of the Jard property. START member Saylor monitored all low-flow ground water parameters per the Site-specific QAPP and START SOPs. See the field data sheets for more information.
- 1355 hrs: Stabilization of water quality parameters was achieved and ground water sample GW-01 (Sample #: JCW-001; CLP #: A4A90) was collected from monitoring well EPA-100. Ground water sample GW-01 was collected using a bladder pump and the final water quality parameters were as follows: Temperature = 4.03 °C; Specific Conductivity = 119 µS/cm; pH = 6.61; ORP = 266.3 mv; DO = 11.74 mg/L; and turbidity = 1.78 NTU. A total of approximately 13.8 liters was purged prior to sample collection with the pump intake at 32 ft below the TOC.
- 1345 hrs: START member Robinson began monitoring of low-flow parameters at ground water monitoring well MW-6D located directly west of the former building footprint on the western boundary of the Jard property. START member Robinson monitored all low-flow ground water parameters per the Site-specific QAPP and START SOPs. See the field data sheets for more information.
- 1405 hrs: Stabilization of water quality parameters was achieved and ground water sample GW-03 (Sample #: JCW-003; CLP #: A4A92) was collected from monitoring well MW-02. Ground water sample GW-03 was collected using a peristaltic pump with dedicated tubing and the final water quality parameters were as follows: Temperature = 1.41 °C; Specific Conductivity = 79 µS/cm; pH = 5.59; ORP = 175.3 mv; DO = 11.41 mg/L; and turbidity = 0.91 NTU. A total of approximately 11 liters was purged prior to sample collection with the intake at 8.6 ft below the TOC.
- 1505 hrs: Stabilization of water quality parameters was achieved and ground water sample GW-05 (Sample #: JCW-005; CLP #: A4A94) was collected from monitoring well MW-3D. Ground water sample GW-05 was collected using a bladder pump and the final water quality parameters were as follows: Temperature = 1.90 °C; Specific Conductivity = 47 µS/cm; pH = 6.37; ORP = 112.7 mv; DO = 4.75 mg/L; and turbidity = 1.16 NTU. A total of approximately 13.6 liters was purged prior to sample collection with the pump intake at 29 ft below the TOC. In addition, stabilization of water quality parameters was achieved and ground water sample GW-07 (Sample #: JCW-007; CLP # A4A96) was collected from monitoring well MW-6D.

Ground water sample GW-07 was collected using a bladder pump and the final water quality parameters were as follows: Temperature = 7.17 °C; Specific Conductivity = 42 µS/cm; pH = 6.53; ORP = 203.9 mv; DO = 8.80 mg/L; and turbidity = 51.7 NTU. A total of approximately 16.7 liters was purged prior to sample collection with the pump intake at 26.5 ft below the TOC.

- 1545 hrs: START member Robinson began monitoring of low-flow parameters at ground water monitoring well MW-6 located directly west of the former building footprint on the western boundary of the Jard property. START member Robinson monitored all low-flow ground water parameters per the Site-specific QAPP and START SOPs. See the field data sheets for more information. The YSI initially used to monitor low-flow ground water parameters was replaced with one that was operational.
- 1555 hrs: START member Saylor began monitoring of low-flow parameters at ground water monitoring well MW-3 located directly south of the former building footprint on the southern portion of the Jard property. START member Saylor monitored all low-flow ground water parameters per the Site-specific QAPP and START SOPs. See the field data sheets for more information. Low-flow ground water parameters were not conducted within a flow cell due to potential contamination/non-aqueous phase liquid (NAPL) within the well. Previous purging of the well on 28 March 2013 indicated product within the well that had a greasy feel and contained small oil droplets that were black in color.
- 1600 hrs: Equipment rinsate blank sample RB-20 (Sample #: JCW-012; CLP #: A4B01) was collected from a bladder pump sampling equipment and is associated with ground water sampling activities.
- 1630 hrs: Stabilization of water quality parameters was achieved and ground water sample GW-06 (Sample #: JCW-006; CLP #: A4A95) was collected from monitoring well MW-6. Ground water sample GW-06 was collected using a peristaltic pump with dedicated tubing and the final water quality parameters were as follows: Temperature = 4.18 °C; Specific Conductivity = 116 µS/cm; pH = 6.35; ORP = -83.6 mv; DO = 0.20 mg/L; and turbidity = 0.72 NTU. A total of approximately 9 liters was purged prior to sample collection with the intake at 13.5 ft below the TOC.
- 1700 hrs: Stabilization of water quality parameters was achieved and ground water sample GW-04 (Sample #: JCW-004; A4A93) was collected from monitoring well MW-3. Ground water sample GW-04 was collected using a peristaltic pump with dedicated tubing and the final water quality parameters were as follows: Temperature = 1.25 °C; Specific Conductivity = 69 µS/cm; pH = 6.67; ORP = -158.2 mv; DO = 4.40 mg/L; and turbidity = 0.93 NTU. A total of approximately 15 liters was purged prior to sample collection with the intake at 10.5 ft below the TOC. Ground water sample GW-04 was also collected for congener analysis.
- 1730 hrs: IDW purge water was containerized in 55-gallon steel drums and segregated based on well location (on or off the Jard property). Segregation is to aid in later IDW disposal, assuming wells from on the Jard property contain high concentrations of contaminants than those wells located off the Jard property. In addition, waste soil material and IDW Decon waste are also segregated to aid in later IDW disposal activities. START personnel secured IDW drums, secured the site and departed the Jard property.

### 3 April 2013 (Wednesday) – Soil/Source Sampling

Weather: Partly cloudy, high 30 °F

- 0700 hrs: START members Kelly, Hornok, Bitzas, Imbres, Robinson, and Jonathan Saylor arrived at the Jard property. In addition, performance evaluation samples PE-AA3325 (Sample #: JCW-014;

CLP #: A4B03) and PE-AA2555 (Sample #: JCW-015; CLP#: A4B04) were collected for CLP Aroclor analysis.

- 0715 hrs: START HSC Kelly reviewed the site HASP and conducted a tailgate health and safety meeting for all on-site START personnel, including reviews of the physical hazards (uneven terrain, trips-slips-falls, heavy lifting, potential adverse weather conditions), chemical hazards (PCBs), Radiation (Not encountered previously but will be monitored) and biological hazards (ticks, poison ivy, snakes, animals). Personnel reviewed and signed the HASP documentation, as needed. START members completed calibration checks on air monitoring instrument; MultiRAE Plus, LEL, O<sub>2</sub>, H<sub>2</sub>S, CO, and PID meter. Background ambient readings: LEL = 0%; O<sub>2</sub> = 20.9%; H<sub>2</sub>S = 0 ppm; CO = 0 ppm; and VOC = 0 ppm.  
START Team established decontamination area and conduct decontamination of non-dedicated equipment. Non-dedicated equipment (augers, metal scoops, etc.) will be decontaminated after the collection of each sample, and prior to use for the collection of other samples.
- 0815 hrs: Soil/source sample SO-01A (Sample #: JCS-001) was collected with a hand auger at a depth of 0 to 8 inches bgs from the upper north-central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 0820 hrs: Soil/source sample SO-02A (Sample #: JCS-002) was collected with a hand auger at a depth of 0 to 6 inches bgs from the upper central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 0830 hrs: Soil/source sample SO-03A (Sample #: JCS-003) was collected with a hand auger at a depth of 0 to 6 inches bgs from the upper north-central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.  
In addition, soil/source sample SO-04A (Sample #: JCS-004) was collected with a hand auger at a depth of 0 to 12 inches bgs from the upper central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 0840 hrs: Soil/source sample SO-05A (Sample #: JCS-005) was collected with a hand auger at a depth of 0 to 8 inches bgs from the upper north-central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.  
In addition, soil/source sample SO-06A (Sample #: JCS-006) was collected with a hand auger at a depth of 0 to 6 inches bgs from the upper central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 0845 hrs: Soil/source sample SO-06B (Sample #: JCS-007) and soil/source field duplicate SO-100B (Sample #: JCS-065) were collected with a hand auger at a depth of 6 to 12 inches bgs from the upper central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 0855 hrs: Soil/source sample SO-07A (Sample #: JCS-008) was collected with a hand auger at a depth of 0 to 12 inches bgs from the upper north-central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.  
In addition, soil/source sample SO-08A (Sample #: JCS-009) was collected with a hand auger at a depth of 0 to 8 inches bgs from the upper north-central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1010 hrs: Soil/source sample SO-09A (Sample #: JCS-027) was collected with a hand auger at a depth of 0 to 8 inches bgs from the upper west-central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.  
In addition, soil/source sample SO-10A (Sample #: JCS-010) was collected with a hand auger at a depth of 0 to 12 inches bgs from the upper central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.

- 1025 hrs: Soil/source sample SO-12A (Sample #: JCS-013) was collected with a hand auger at a depth of 0 to 6 inches bgs from the upper east-central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1030 hrs: Soil/source sample SO-11A (Sample #: JCS-011) was collected with a hand auger at a depth of 0 to 18 inches bgs from the upper west-central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1035 hrs: Soil/source sample SO-11B (Sample #: JCS-012) was collected with a hand auger at a depth of 18 to 42 inches bgs from the upper west-central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1040 hrs: Soil/source sample SO-14A (Sample #: JCS-015) was collected with a hand auger at a depth of 0 to 12 inches bgs from the upper east-central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1050 hrs: Soil/source sample SO-16A (Sample #: JCS-017) was collected with a hand auger at a depth of 0 to 6 inches bgs from the upper south-central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1055 hrs: Soil/source sample SO-16B (Sample #: JCS-018) was collected with a hand auger at a depth of 6 to 12 inches bgs from the upper south-central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1100 hrs: Soil/source sample SO-13A (Sample #: JCS-014) was collected with a hand auger at a depth of 0 to 16 inches bgs from the upper western-central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1106 hrs: Soil/source sample SO-18A (Sample #: JCS-020) was collected with a hand auger at a depth of 0 to 6 inches bgs from the upper southwestern portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1110 hrs: Soil/source sample SO-15A (Sample #: JCS-016) was collected with a hand auger at a depth of 0 to 18 inches bgs from the upper southwestern portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1123 hrs: Soil/source sample SO-18B (Sample #: JCS-021) was collected with a hand auger at a depth of 6 to 12 inches bgs from the upper southwestern portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1125 hrs: Soil/source sample SO-17A (Sample #: JCS-019) was collected with a hand auger at a depth of 0 to 12 inches bgs from the upper southwestern portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1130 hrs: Soil/source sample SO-19A (Sample #: JCS-022) was collected with a hand auger at a depth of 0 to 12 inches bgs from the upper central portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1143 hrs: Soil/source sample SO-20A (Sample #: JCS-023) was collected with a hand auger at a depth of 0 to 6 inches bgs from the upper southern portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1150 hrs: Soil/source sample SO-21A (Sample #: JCS-024) was collected with a hand auger at a depth of 0 to 12 inches bgs from the upper southern portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1155 hrs: Soil/source sample SO-22A (Sample #: JCS-025) was collected with a hand auger at a depth of 0 to 6 inches bgs from the upper southwestern portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1200 hrs: Soil/source sample SO-23A (Sample #: JCS-026) was collected with a hand auger at a depth of 0 to 3 inches bgs from the upper southwestern portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.

- 1215 hrs: START personnel continued to complete CLP documentation and to package ground water and rinsate blank samples for shipment to the CLP Laboratory located in Mountainside, New Jersey. START geologist Kelly continued to conduct classification of sample matrix materials using the modified Burmister soil classification and to prepare sample aliquots for field screening.
- 1540 hrs: Equipment rinsate blank sample RB-02 (Sample #: JCW-016; CLP #: A4B05) was collected from a hand auger sampling equipment (augers, scoops, etc.) and is associated with soil/source sampling activities.
- 1630 hrs: START personnel completed sample shipment preparation, organized and packaged traffic reports. START member Bitzas left the site and proceeded to deliver samples and paperwork to FedEx, located in Menands, New York for shipment. Below is a summary of the traffic reports (TR), Airbill numbers (AB), and samples sent to the CLP Organics Laboratory (Chemtech Consulting Group) for PCB Aroclor analysis:
- TR #: 1-040313-081601-0001, Master AB #: 5141 2418 0581, four groundwater samples for PCB Aroclor analysis. These four samples were shipped as dangerous goods due to previous sampling results and field observations and were to be combined with samples shipped under TR #: 1-040313-083108-0002 AB #: 5141 2418 0559, to constitute a complete sample delivery group (SDG) with appropriate quality assurance/quality control (QA/QC) samples.
- TR #: 1-040313-083108-0002 AB #: 5141 2418 0559, seven ground water samples including one field duplicate, and one MS/MSD; plus two rinsate blank, and two performance evaluation samples for PCB Aroclor analysis. Samples from this TR were to be combined with samples shipped under TR #: 1-040313-081601-0001, Master AB #: 5141 2418 0581, to form a complete SDG.
- 1700 hrs: START personnel secured IDW drums, secured the site and departed the Jard property.

#### 4 April 2013 (Thursday) – Soil/Source Sampling

Weather: Sunny, 45 to 50 °F

- 0700 hrs: START members Kelly, Hornok, Bitzas, Imbres, Robinson, and Jonathan Saylor arrived at the Jard property.
- 0715 hrs: START HSC Kelly reviewed the site HASP and conducted a tailgate health and safety meeting for all on-site START personnel, including reviews of the physical hazards (uneven terrain, trips-slips-falls, heavy lifting, traffic concerns, potential adverse weather conditions), chemical hazards (PCBs), Radiation (Not encountered previously but will be monitored) and biological hazards (ticks, poison ivy, animals). Personnel reviewed and signed the HASP documentation, as needed. START members completed calibration checks on air monitoring instrument; MultiRAE Plus, LEL, O<sub>2</sub>, H<sub>2</sub>S, CO, and PID meter. Background ambient readings: LEL = 0%; O<sub>2</sub> = 20.9%; H<sub>2</sub>S = 0 ppm; CO = 0 ppm; and VOC = 0 ppm. START Team established decontamination area and conduct decontamination of non-dedicated equipment. Non-dedicated equipment (augers, metal scoops, etc.) will be decontaminated after the collection of each sample, and prior to use for the collection of other samples.
- 0800 hrs: Soil/source sample SO-24A (Sample #: JCS-078) was collected with a hand auger at a depth of 0 to 8 inches bgs from the drainage ditch located on the northwestern portion of the Jard property and later submitted for PCB field screening analysis. In addition, soil/source sample SO-25A (Sample #: JCS-028) was collected with a hand auger at a depth of 0 to 12 inches bgs from the drainage ditch located on the western portion of the Jard property and later submitted for PCB field screening analysis.

- Soil/source sample SO-50A (Sample #: JCS-066) was collected with a hand auger at a depth of 0 to 12 inches bgs from the area below the former transformer area located on the southern portion of the Jard property and later submitted for PCB field screening analysis.
- 0805 hrs: Soil/source sample SO-24B (Sample #: JCS-079) was collected with a hand auger at a depth of 8 to 24 inches bgs from the drainage ditch located on the northwestern portion of the Jard property and later submitted for PCB field screening analysis.
- 0810 hrs: Soil/source sample SO-25B (Sample #: JCS-029) was collected with a hand auger at a depth of 12 to 30 inches bgs from the drainage ditch located on the western portion of the Jard property and later submitted for PCB field screening analysis.
- In addition, soil/source sample SO-24C (Sample #: JCS-080) was collected with a hand auger at a depth of 24 to 30 inches bgs from the drainage ditch located on the northwestern portion of the Jard property and later submitted for PCB field screening analysis.
- Soil/source sample SO-50B (Sample #: JCS-067) was collected with a hand auger at a depth of 12 to 16 inches bgs from the area below the former transformer area located on the southern portion of the Jard property and later submitted for PCB field screening analysis.
- 0815 hrs: Soil/source sample SO-25C (Sample #: JCS-030) was collected with a hand auger at a depth of 30 to 48 inches bgs from the drainage ditch located on the western portion of the Jard property and later submitted for PCB field screening analysis.
- 0818 hrs: Soil/source sample SO-51A (Sample #: JCS-068) was collected with a hand auger at a depth of 0 to 6 inches bgs from the area below the former transformer area located on the southern portion of the Jard property and later submitted for PCB field screening analysis.
- 0823 hrs: Soil/source sample SO-26A (Sample #: JCS-031) was collected with a hand auger at a depth of 0 to 12 inches bgs from the drainage ditch located on the northwestern portion of the Jard property and later submitted for PCB field screening analysis.
- 0826 hrs: Soil/source sample SO-52A (Sample #: JCS-069) was collected with a hand auger at a depth of 0 to 4 inches bgs from the area below the former transformer area located on the southern portion of the Jard property and later submitted for PCB field screening analysis.
- 0830 hrs: Soil/source sample SO-27A (Sample #: JCS-036) was collected with a hand auger at a depth of 0 to 18 inches bgs from the drainage ditch located on the western portion of the Jard property and later submitted for PCB field screening analysis.
- 0833 hrs: Soil/source sample SO-26B (Sample #: JCS-032) was collected with a hand auger at a depth of 12 to 18 inches bgs from the drainage ditch located on the northwestern portion of the Jard property and later submitted for PCB field screening analysis.
- 0835 hrs: Soil/source sample SO-27B (Sample #: JCS-038) was collected with a hand auger at a depth of 18 to 24 inches bgs from the drainage ditch located on the western portion of the Jard property and later submitted for PCB field screening analysis.
- 0836 hrs: Soil/source sample SO-26C (Sample #: JCS-033) was collected with a hand auger at a depth of 18 to 24 inches bgs from the drainage ditch located on the northwestern portion of the Jard property and later submitted for PCB field screening analysis.
- 0840 hrs: Soil/source sample SO-26D (Sample #: JCS-034) was collected with a hand auger at a depth of 24 to 36 inches bgs from the drainage ditch located on the northwestern portion of the Jard property and later submitted for PCB field screening analysis.
- 0845 hrs: Soil/source sample SO-29A (Sample #: JCS-040) was collected with a hand auger at a depth of 0 to 12 inches bgs from the area located along the western boundary of the Jard property and later submitted for PCB field screening analysis.
- 0850 hrs: Soil/source sample SO-26E (Sample #: JCS-035) was collected with a hand auger at a depth of 36 to 42 inches bgs from the drainage ditch located on the northwestern portion of the Jard property and later submitted for PCB field screening analysis.

- 0900 hrs: Soil/source sample SO-31A (Sample #: JCS-043) was collected with a hand auger at a depth of 0 to 12 inches bgs from the area located along the western boundary of the Jard property and later submitted for PCB field screening analysis.
- 0905 hrs: Soil/source sample SO-28A (Sample #: JCS-039) was collected with a hand auger at a depth of 0 to 8 inches bgs from the area located along the western boundary of the Jard property and later submitted for PCB field screening analysis.  
In addition, soil/source sample SO-31B (Sample #: JCS-044) was collected with a hand auger at a depth of 12 to 24 inches bgs from the area located along the western boundary of the Jard property and later submitted for PCB field screening analysis.
- 0920 hrs: Soil/source sample SO-30A (Sample #: JCS-041) was collected with a hand auger at a depth of 0 to 12 inches bgs from the area located along the southwestern boundary of the Jard property and later submitted for PCB field screening analysis.  
In addition, soil/source sample SO-33A (Sample #: JCS-081) was collected with a hand auger at a depth of 0 to 18 inches bgs from the area located along the northwestern boundary of the Jard property and later submitted for PCB field screening analysis.
- 0930 hrs: Soil/source sample SO-30B (Sample #: JCS-042) was collected with a hand auger at a depth of 12 to 24 inches bgs from the area located along the southwestern boundary of the Jard property and later submitted for PCB field screening analysis.  
In addition, soil/source sample SO-33B (Sample #: JCS-082) was collected with a hand auger at a depth of 18 to 30 inches bgs from the area located along the northwestern boundary of the Jard property and later submitted for PCB field screening analysis.
- 0935 hrs: Soil/source sample SO-33C (Sample #: JCS-083) was collected with a hand auger at a depth of 30 to 36 inches bgs from the area located along the northwestern boundary of the Jard property and later submitted for PCB field screening analysis.
- 0940 hrs: Soil/source sample SO-32A (Sample #: JCS-045) was collected with a hand auger at a depth of 0 to 12 inches bgs from the area located along the southwestern boundary of the Jard property and later submitted for PCB field screening analysis.
- 1035 hrs: Soil/source sample SO-35A (Sample #: JCS-047) was collected with a hand auger at a depth of 0 to 12 inches bgs from the southwestern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1045 hrs: Soil/source sample SO-37A (Sample #: JCS-049) was collected with a hand auger at a depth of 0 to 6 inches bgs from the southwestern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.  
In addition, soil/source sample SO-53A (Sample #: JCS-084) was collected with a hand auger at a depth of 0 to 12 inches bgs from the area below the former transformer area located on the southern portion of the Jard property and later submitted for PCB field screening analysis.
- 1055 hrs: Soil/source sample SO-39A (Sample #: JCS-051) was collected with a hand auger at a depth of 0 to 12 inches bgs from the southwestern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.  
In addition, soil/source sample SO-54A (Sample #: JCS-085) was collected with a hand auger at a depth of 0 to 8 inches bgs from the area below the former transformer area located on the southern portion of the Jard property and later submitted for PCB field screening analysis.
- 1100 hrs: Soil/source sample SO-39B (Sample #: JCS-052) was collected with a hand auger at a depth of 12 to 24 inches bgs from the southwestern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.  
START geologist Kelly continued to conduct classification of sample matrix materials using the modified Burmiester soil classification and to prepare sample aliquots for field screening.



- 1110 hrs: Soil/source sample SO-41A (Sample #: JCS-054) was collected with a hand auger at a depth of 0 to 8 inches bgs from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1120 hrs: Soil/source sample SO-41B (Sample #: JCS-055) was collected with a hand auger at a depth of 8 to 18 inches bgs from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1125 hrs: Soil/source sample SO-41C (Sample #: JCS-056) was collected with a hand auger at a depth of 18 to 30 inches bgs from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1145 hrs: Soil/source sample SO-34A (Sample #: JCS-046) was collected with a hand auger at a depth of 0 to 12 inches bgs from the upper northeastern portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.  
In addition, soil/source sample SO-43A (Sample #: JCS-058) was collected with a hand auger at a depth of 0 to 12 inches bgs from the southwestern toe slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1150 hrs: Soil/source sample SO-45A (Sample #: JCS-060) was collected with a hand auger at a depth of 0 to 18 inches bgs from the western toe slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1210 hrs: Soil/source sample SO-47A (Sample #: JCS-062) was collected with a hand auger at a depth of 0 to 6 inches bgs from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1210 hrs: START Member Hornok contacted and discussed sampling progress with COR Bosworth. Discussed number of samples collected to date, groundwater well sampling status, difficulties source sampling to depth on the upper portion of the source pile, source areas along western property boundary, and planned field screening and sampling activities. Scott Clifford (EPA Chemist) will be on site on Monday (4/8/13).
- 1225 hrs: Soil/source sample SO-38A (Sample #: JCS-050) was collected with a hand auger at a depth of 0 to 8 inches bgs from the upper northern portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1230 hrs: Soil/source sample SO-36A (Sample #: JCS-048) was collected with a hand auger at a depth of 0 to 12 inches bgs from the upper northern portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.  
In addition, soil/source sample SO-49A (Sample #: JCS-064) was collected with a plastic scoop at a depth of 0 to 3 inches bgs from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1235 hrs: Soil/source sample SO-55A (Sample #: JCS-070) was collected with a plastic scoop at a depth of 0 to 4 inches bgs from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1350 hrs: Soil/source sample SO-56A (Sample #: JCS-071) was collected with a hand auger at a depth of 0 to 12 inches bgs from the western toe slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1405 hrs: Soil/source sample SO-57A (Sample #: JCS-072) was collected with a hand auger at a depth of 0 to 6 inches from the western toe slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1415 hrs: Soil/source sample SO-40A (Sample #: JCS-053) was collected with a hand auger at a depth of 0 to 8 inches bgs from the upper northwestern portion of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.



- 1420 hrs: Soil/source sample SO-42A (Sample #: JCS-057) was collected with a hand auger at a depth of 0 to 12 inches bgs from the northern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1425 hrs: Soil/source sample SO-59A (Sample #: JCS-074) was collected with a metal scoop at a depth of 0 to 4 inches bgs from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1430 hrs: Soil/source sample SO-58A (Sample #: JCS-073) was collected with a metal scoop at a depth of 0 to 2 inches bgs from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1435 hrs: Soil/source sample SO-60A (Sample #: JCS-075) was collected with a hand auger at a depth of 0 to 12 inches bgs from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1438 hrs: Soil/source sample SO-46A (Sample #: JCS-061) was collected with a hand auger at a depth of 0 to 8 inches from the northern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1440 hrs: Soil/source sample SO-44A (Sample #: JCS-059) was collected with a hand auger at a depth of 0 to 6 inches bgs from the northern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1505 hrs: Soil/source sample SO-61A (Sample #: JCS-182) was collected with a hand auger at a depth of 0 to 12 inches from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1515 hrs: Soil/source sample SO-63A (Sample #: JCS-077) was collected with a hand auger at a depth of 0 to 8 inches bgs from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1520 hrs: Soil/source sample SO-62A (Sample #: JCS-076) was collected with a hand auger at a depth of 0 to 12 inches from the northern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.  
In addition, soil/source sample SO-64A (Sample #: JCS-183) was collected with a hand auger at a depth of 0 to 4 inches from the northern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1630 hrs: Soil/source sample SO-48A (Sample #: JCS-063) was collected with a plastic scoop at a depth of 0 to 3 inches bgs from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1700 hrs: Equipment rinsate blank sample RB-03 (Sample #: JCW-017; CLP #: A4B06) was collected from hand auger sampling equipment (augers, scoops, etc.) associated with soil/source sampling activities.
- 1705 hrs: Equipment rinsate blank sample RB-04 (Sample #: JCW-018; CLP #: A4B07) was collected from hand auger sampling equipment (augers, scoops, etc.) associated with soil/source sampling activities.
- 1730 hrs: START personnel secured IDW drums, secured the site and departed the Jard property.

#### 5 April 2013 (Friday) – Soil/Source Sampling

Weather: Partly cloudy, low 50 °F

- 0730 hrs: START members Kelly, Hornok, Bitzas, Imbres, Robinson, and Jonathan Saylor arrived at the Jard property. COR Bosworth also arrived on site for meeting with EPA and town representatives.
- 0745 hrs: START HSC Kelly reviewed the site HASP and conducted a tailgate health and safety meeting for all on-site START personnel, including reviews of the physical hazards (uneven

terrain, trips-slips-falls, heavy lifting, traffic concerns, potential adverse weather conditions), chemical hazards (PCBs), Radiation (Not encountered previously but will be monitored) and biological hazards (ticks, poison ivy, animals). Personnel reviewed and signed the HASP documentation, as needed. START members completed calibration checks on air monitoring instrument; MultiRAE Plus, LEL, O<sub>2</sub>, H<sub>2</sub>S, CO, and PID meter. Background ambient readings: LEL = 0%; O<sub>2</sub> = 20.9%; H<sub>2</sub>S = 0 ppm; CO = 0 ppm; and VOC = 0 ppm.

START Team established decontamination area and conduct decontamination of non-dedicated equipment. Non-dedicated equipment (augers, metal scoops, etc.) will be decontaminated after the collection of each sample, and prior to use for the collection of other samples.

START members Kelly and Hornok held discussions with COR Bosworth regarding current status of sampling activities, Flex-viewer Data Management Resource, and groundwater shipment/delivery.

0845 hrs: Soil/source sample SO-65A (Sample #: JCS-086) was collected with a hand auger at a depth of 0 to 8 inches from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.

START geologist Kelly continued to conduct classification of sample matrix materials using the modified Burmister soil classification and to prepare sample aliquots for field screening.

0855 hrs: Soil/source sample SO-66A (Sample #: JCS-087) was collected with a plastic scoop at a depth of 0 to 3 inches bgs from the northern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.

0900 hrs: Soil/source sample SO-67A (Sample #: JCS-088) was collected with a hand auger at a depth of 0 to 6 inches bgs from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.

In addition, soil/source sample SO-68A (Sample #: JCS-089) was collected with a hand auger at a depth of 0 to 12 inches bgs from the northern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.

0915 hrs: Soil/source sample SO-70A (Sample #: JCS-093) was collected with a hand auger at a depth of 0 to 12 inches bgs from the northern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.

In addition, soil/source sample SO-72A (Sample #: JCS-095) was collected with a hand auger at a depth of 0 to 10 inches bgs from the drainage area at the base of the northeastern corner of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.

0920 hrs: Soil/source sample SO-69A (Sample #: JCS-090) was collected with a hand auger at a depth of 0 to 12 inches bgs from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.

In addition, soil/source sample SO-72B (Sample #: JCS-096) was collected with a hand auger at a depth of 10 to 20 inches bgs from the drainage area at the base of the northeastern corner of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.

0925 hrs: Soil/source sample SO-69B (Sample #: JCS-091) was collected with a hand auger at a depth of 12 to 36 inches bgs from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.

0930 hrs: Soil/source sample SO-69C (Sample #: JCS-092) was collected with a hand auger at a depth of 36 to 48 inches bgs from the western slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.

- 0945 hrs: Soil/source sample SO-76A (Sample #: JCS-102) was collected with a hand auger at a depth of 0 to 14 inches bgs from the eastern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 0950 hrs: Soil/source sample SO-71A (Sample #: JCS-094) was collected with a hand auger at a depth of 0 to 24 inches bgs from the lower eastern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.  
In addition, soil/source sample SO-74A (Sample #: JCS-098) was collected with a hand auger at a depth of 0 to 12 inches bgs from the eastern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1000 hrs: Soil/source sample SO-74B (Sample #: JCS-099) was collected with a hand auger at a depth of 12 to 30 inches bgs from the eastern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1005 hrs: Soil/source sample SO-73A (Sample #: JCS-097) was collected with a hand auger at a depth of 0 to 28 inches bgs from the eastern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1010 hrs: Soil/source sample SO-75A (Sample #: JCS-100) was collected with a hand auger at a depth of 0 to 12 inches bgs from the eastern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1020 hrs: Soil/source sample SO-77A (Sample #: JCS-101) was collected with a hand auger at a depth of 0 to 18 inches bgs from the eastern slope of the pile located on the eastern portion of the Jard property and later submitted for PCB field screening analysis.
- 1100 hrs: VT DEC ANR Wetland Specialist Julie Foley arrived on-site to discuss wetland areas around the site with START personnel. Wetland Specialist Foley provide START with previously completed wetland delineation map of wetlands to west of Park Street. START members Hornok, Bitzas and Kelly reviewed available wetland references/maps with Specialist Foley.
- 1130 hrs: Equipment rinsate blank sample RB-05 (Sample #: JCW-019; CLP #: A4B08) was collected from hand auger sampling equipment (augers, scoops, etc.) associated with soil/source sampling activities.  
COR Bosworth returned from meeting with Section Chief Meghan Cassidy to review operations.
- 1140 hrs: COR Bosworth and Section Chief Cassidy departed site.  
Wetland Specialist Foley accompanied START members Kelly and Bitzas on reconnaissance of wetland areas to the west of Park Street and background wetland area along Bowen Road north of the Jard property.
- 1200 hrs: START personnel completed sample shipment preparation, organized and packaged traffic reports. START members Robinson and Saylor proceeded to deliver samples and paperwork to FedEx, located in Brattleboro, VT for shipment. Below is a summary of the TRs AB numbers and samples sent to the CLP Organics Laboratory (Chemtech Consulting Group) for PCB Aroclor analysis:  
TR #: 1-040513-111321-0003, Master AB #: 5141 2418.0662, four aqueous equipment rinsate blank samples for PCB Aroclor analysis.
- 1215 hrs: Wetland Specialist Foley confirmed that wetland delineation map of wetlands to west of Park Street is generally the same as current conditions based on reconnaissance and review of area. Foley also noted that the proposed background area to the north along Bowen Road, contained similar types of wetland (PEM, PSS, POW, etc.). Wetland Specialist Foley left the site to attend a local meeting/inspection.  
START member Kelly spoke START PM McDuffee regarding leaving the Geoprobe Truck secured on the VTrans property for the weekend in an effort to be more sustainable/"Green". PM McDuffee agreed to plan.

START members Hornok and Kelly spoke with a VTrans representative at the Bowen Road facility regarding leaving the Geoprobe Truck secured on the VTDOT property for the weekend in an effort to be more sustainable/"Green". The VTrans representative agreed and explained there security for the weekend hours and where it would be best to park the vehicle. Informed PM McDuffee agreed to plan.

1230 hrs: Remaining START personnel secured IDW drums, secured the site and departed the Jard property for the START office located in Andover, MA.

#### 8 April 2013 (Monday) – Soil/Source Sampling

Weather: Partly sunny, high 50 to low 60 °F

1030 hrs: START members Kelly, Hornok, Bitzas, Eric Ackerman, Chris Dupree, Robinson, Jonathan Saylor, and Robert Sharp arrived at the Jard property. START Member Hornok picked up Geoprobe truck from VT DOT facility along Bowen Road. In addition, EPA SAM Martha Bosworth had already arrived on-site.

1045 hrs: START HSC Kelly reviewed the site HASP and conducted a tailgate health and safety meeting for all on-site START personnel, including reviews of the physical hazards (uneven terrain, trips-slips-falls, heavy lifting, Geoprobe Work concerns, potential adverse weather conditions), chemical hazards (PCBs), Radiation (Not encountered previously but will be monitored) and biological hazards (ticks, poison ivy, dogs, animals). Personnel reviewed and signed the HASP documentation, as needed. START members completed calibration checks on air monitoring instrument; MultiRAE Plus, LEL, O<sub>2</sub>, H<sub>2</sub>S, CO, and PID meter. Background ambient readings: LEL = 0%; O<sub>2</sub> = 20.9%; H<sub>2</sub>S = 0 ppm; CO = 0 ppm; and VOC = 0 ppm.

START Team established decontamination area and conduct decontamination of non-dedicated equipment. Non-dedicated equipment (Geoprobe equipment, augers, metal scoops, etc.) will be decontaminated after the collection of each sample, and prior to use for the collection of other samples.

1100 hrs: Soil boring activities began at soil boring location SB-05 located on the south-eastern area of the former building footprint in an area previously excavated during an EPA Removal action. In addition, EPA Office of Environmental Measurement and Evaluation (OEME) Mobile Laboratory chemist Scott Clifford arrived on-site to perform PCB field screening analysis. Sample aliquots for PCB field screening, collected to date between 1 April and 5 April, were transferred to EPA chemist Clifford for processing and PCB field screening analyses.

START geologist Kelly continued to conduct classification of sample matrix materials using the modified Burmister soil classification and to prepare sample aliquots for field screening.

1130 hrs: Soil/source sample SB-05A (Sample #: JCS-137) was collected using a Geoprobe macrocore from a depth of 2.1 to 4 feet bgs from soil boring SB-05 and later submitted for PCB field screening analysis.

1135 hrs: Soil/source sample SB-05B (Sample #: JCS-138) was collected using a Geoprobe macrocore from a depth of 5.3 to 5.6 feet bgs from soil boring SB-05 and later submitted for PCB field screening analysis.

1140 hrs: START personnel completed soil boring activities at location SB-05. Soil boring SB-05 was completed to a depth of 6 feet bgs due to refusal. Team backfilled hole with sand and bentonite and relocated to next location. Boring activities began at soil boring location SB-07 located on the south-eastern area of the former building footprint in an area previously excavated during an EPA Removal action.

No: 1-040313-083108-0002

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

COPY

Sample(s) to be used for Lab QC: A4A99 - Special Instructions: Please combine with samples shipped under FedEx Airbill #: 5141 2418 0581, COC #: 1-040313-081601-0001 to form one sample delivery group. <div style="text-align: right;">TEMP: 8 C</div>	Shipment for Case Complete? N Samples Transferred From Chain of Custody # <div style="text-align: right;">N/A</div>
Analysis Key: CLP PCBs=SOM01.2 Aroclors	

[illegible]

## Cooler #:

Special Instructions: Samples shipped as dangerous goods due to elevated PCB concentrations noted in previous sampling. Note, CLP Sample # A4A93 contains NAPL and may require dilution. Also, please combine these samples with samples shipped under Fedex Airbill # 5141 2418 0559, COC #: 1-040313-083108-0002 to create one SDG.	Shipment for Case Complete? N
	Samples Transferred From Chain of Custody #
Analysis Key: CLP PCBs=SOM01.2 Aroclors	

[illegible]

Temp.  $4^{\circ}\text{C}$

USEPA CLP Organics COC (LAB COPY)

DateShipped: 4/5/2013

CarrierName: FedEx

AirbillNo: 5141 2418 0662

## CHAIN OF CUSTODY RECORD

Case #: 43392

Cooler #: EPASB010

No: 1-040513-111321-0003

Lab: ChemTech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

# COPY

[illegible]

Special Instructions:	Shipment for Case Complete? N
	Samples Transferred From Chain of Custody # N/A
Analysis Key: CLP PCBs=SOM01.2 Aroclors	

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
Samples	C. Gubaro	4/5/13	Arb. bill No. 5141 2418 0662	4/5/13	1200						
						Samples	Arb. bill No. 5141 2418 0662		Palak Shah	4/6/13	955

Temp  $4^{\circ}\text{C}$

LABORATORY NAME :	CHEMTECH CONSULTING GROUP, INC.		
CITY / STATE :	MOUNTAINSIDE, NJ		
CASE NO :	43392	SDG NO :	A4A90
SDG NOS TO FOLLOW	N/A	N/A	
MOD. REF. NO. :	N/A	N/A	
CONTRACT NO :	EPW11030		
SOW NO :	SOM 01.2		

APR 26 2013

All documents delivered in the Complete SDG File (CSF) must be original documents where possible.

	PAGE NOS:		LAB	CHECK
	FROM	TO		USEPA
1. Inventory Sheet (DC-2) (Do not number)				
2. SDG Narrative	1	7	✓	✓
3. SDG Cover Sheet/Traffic Report	8	11	✓	✓
4. <u>Trace Volatiles Data</u>				
a. <u>QC Summary</u>				
Deuterated Monitoring Compound Recovery (Form II VOA-1 and VOA-2)	NA	NA	-	NA
Matrix Spike/Matrix Spike Duplicate Recover (Form III VOA) (if requested by USEPA Region)	NA	NA	-	
Method Blank Summary (Form IV VOA)	NA	NA	-	
GC/MS Instrument Performance Check (Form V VOA)	NA	NA	-	
Internal Standard Area and RT Summary (Form VIII VOA)	NA	NA	-	
b. <u>Sample Data</u>	NA	NA	-	
TCL Results - Organics Analysis Data Sheet (Form I VOA-1 and VOA-2)				
Tentatively Identified Compounds (Form I VOA-TIC)				
Reconstructed total ion chromatograms (RIC) for each sample				
For each sample:				
Raw Spectra and background-subtracted mass spectra of target compounds identified				
Quantitation reports				
Mass Spectra of all reported TICs with three best library matches				
c. <u>Standards Data (All Instruments)</u>	NA	NA		
Initial Calibration Data (Form VI VOA-1, VOA-2, VOA-3)			-	
RICs and Quantitation Reports for all Standards				
Continuing Calibration Data (Form VII VOA-1, VOA-2, VOA-3)				
RICs and Quantitation Reports for all Standards				
d. <u>Raw/Quality Control</u>				
BFB	NA	NA	-	
Blank Data	NA	NA	-	
Matrix Spike/Matrix Spike Duplicate Data (if requested by USEPA Region)	NA	NA	-	

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ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET  
FORM DC-2

CASE NO : 43392	SDG NO : A4A90	SDG NOs TO FOLLOW : N/A
N/A	N/A	MOD. REF. NO : N/A

- | e. Trace SIM Data (Place at the end of the Trace Volatiles Section)  |  | NA | NA | - | NA |
|--|--|----|----|---|----|
| [Form I VOA-SIM; Form II VOA-SIM1 and VOA-SIM2; Form IV-VOA-SIM; Form VI VOA-SIM; Form VII VOA-SIM; Form VIII VOA-SIM; and all raw data for QC, Samples, and Standards.] |  |    |    |   |    |
| 5. <u>Low/Med Volatiles Data</u>   |  |    |    |   |    |
| a. QC Summary  |  |    |    |   |    |
| Deuterated Monitoring Compound Recovery (Form II VOA-1, VOA-2, VOA-3, VOA-4)   |  | NA | NA | - |    |
| Matrix Spike/Matrix Spike Duplicate Recovery (Form III VOA-1 and VOA-2) (if requested by USEPA Region)   |  | NA | NA | - |    |
| Method Blank Summary (Form IV VOA)   |  | NA | NA | - |    |
| GC/MS Instrument Performance Check (Form V VOA)  |  | NA | NA | - |    |
| Internal Standard Area and RT Summary (Form VIII VOA)  |  | NA | NA | - |    |
| b. Sample Data   |  | NA | NA |   |    |
| TCL Results - Organics Analysis Data Sheet (Form I VOA-1 and VOA-2)  |  |    |    | - |    |
| Tentatively Identified Compounds (Form I VOA-TIC)  |  |    |    |   |    |
| Reconstructed total ion chromatograms (RIC) for each sample  |  |    |    |   |    |
| For each sample:   |  |    |    |   |    |
| Raw Spectra and background-subtracted mass spectra of target compounds identified  |  |    |    |   |    |
| Quantitation reports   |  |    |    |   |    |
| Mass Spectra of all reported TICs with three best library matches  |  |    |    |   |    |
| c. Standards Data (All Instruments)  |  | NA | NA |   |    |
| Initial Calibration Data (Form VI VOA-1, VOA-2, VOA-3)   |  |    |    | - |    |
| RICs and Quantitation Reports for all Standards  |  |    |    |   |    |
| Continuing Calibration Data (Form VII VOA-1, VOA-2, VOA-3)   |  |    |    |   |    |
| RICs and Quantitation Reports for all Standards  |  |    |    |   |    |
| d. Raw/Quality Control (QC) Data   |  |    |    |   |    |
| BFB  |  | NA | NA | - |    |
| Blank Data   |  | NA | NA | - |    |
| Matrix Spike/Matrix Spike Duplicate Data (if requested by USEPA Region)  |  | NA | NA | - |    |

**ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET  
FORM DC-2**

CASE NO : 43392	SDG NO : A4A90	SDG NOs TO FOLLOW : N/A
N/A	N/A	MOD. REF. NO : N/A

**6. Semivolatiles Data**

**a. QC Summary**

Deuterated Monitoring Compound Recovery (Form II SV-1, SV-2, SV-3, SV-4)

NA NA - N/A

Matrix Spike/Matrix Spike Duplicate Recovery Summary (Form III SV-1 and SV-2) (if requested by USEPA Region)

NA NA -

Method Blank Summary (Form IV SV)

NA NA -

GC/MS Instrument Performance Check (Form V SV)

NA NA -

Internal Standard Area and RT Summary (Form VIII SV-1 and SV-2)

NA NA -

**b. Sample Data**

TCL Results - Organics Analysis Data Sheet (Form I SV-1 and SV-2)

NA NA

Tentatively Identified Compounds (Form I SV-TIC)

Reconstructed total ion chromatograms (RIC) for each sample

For each sample:

Raw Spectra and background-subtracted mass spectra of target compounds

Quantitation reports

Mass Spectra of TICs with three best library matches

GPC chromatograms (if GPC is r

NA NA

**c. Standards Data (All Instruments)**

Initial Calibration Data (Form VI SV-1, SV-2, SV-3)

RICs and Quantitation

Continuing Calibration Data (Form VII SV-1, S

RICs and Quantitation Reports for all Standards

NA NA

**d. Raw (QC)Data**

DFTPP

NA NA -

Blank Data

NA NA -

MS/MSD Data (if requested by USEPA Region)

NA NA -

**e. Raw GPC Data**

NA NA -

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**ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET  
FORM DC-2**

CASE NO : 43392	SDG NO : A4A90	SDG NOs TO FOLLOW : N/A
N/A	N/A	MOD. REF. NO : N/A

Semivolatile SIM Data

[Form I SV-SIM; Form II SV-SIM1 and SV-SIM2; Form III-SV-SIM1 and SV-SIM2 (if required; Form IV SV-SIM; Form VI SV-SIM; Form VII SV-SIM; Form VIII SV-SIM1 and SV-SIM2; and all raw data for QC, Samples, and Standards.]

NA NA - NA NA

**7. Pesticides Data**

**a. QC Summary**

Surrogate Recovery Summary (Form II PEST-1 and PEST-2)

NA NA -

Matrix Spike/Matrix Spike Duplicate Recovery Summary  
(Form III PEST-1 and PEST-2)

NA NA -

Laboratory Control Sample Recovery (Form III PEST-3 and PEST-4)

NA NA -

Method Blank Summary (Form IV PEST)

NA NA -

**b. Sample Data**

NA NA

TCL Results - Organics Analysis Data Sheet (Form I PEST)

-

Chromatograms (Primary Column)

Chromatograms from second GC column confirmation

GC Integration report or data system printout

Manual work sheets

For Pesticides by GC/MS

Copies of raw spectra and copies of background-subtracted mass spectra of target compounds (samples & standards)

**c. Standards Data**

NA NA

Initial Calibration of Single Component Analytes (Form VI PEST-1 and PEST-2)

Toxaphene Initial Calibration (Form VI PEST-3 and PEST-4)

-

Analyte Resolution Summary (Form VI PEST-5, per column)

Performance Evaluation Mixture (Form VI PEST-6)

Individual Standard Mixture A (Form VI PEST-7)

Individual Standard Mixture B (Form VI PEST-8)

Individual Standard Mixture C (Form VI PEST-9 and PEST-10)

Calibration Verification Summary (Form VII PEST-1)

Calibration Verification Summary (Form VII PEST-2)

✓

**ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET  
FORM DC-2**

CASE NO : <b>43392</b>	SDG NO : <b>A4A90</b>	SDG NOs TO FOLLOW : <b>N/A</b>
<b>N/A</b>	<b>N/A</b>	MOD. REF. NO : <b>N/A</b>

Calibration Verification Summary (Form VII PEST-3)	_____	<b>NA</b>
Calibration Verification Summary (Form VII PEST-4)	_____	
Analytical Sequence (Form VIII PEST)	_____	
Florisil Cartridge Check (Form IX PEST-1)	_____	
Pesticide GPC Calibration (Form IX PEST-2)	_____	
Identification Summary for Single Component Analytes (Form X PEST-1)	_____	
Identification Summary for Toxaphene Form X PEST-2)	_____	
Chromatograms and data system printouts	_____	
A printout of Retention Times and corresponding peak areas or peak heights	_____	

**d. Raw QC Data**

Blank Data	NA	NA	-	
Matrix Spike/Matrix Spike Duplicate Data	NA	NA	-	
Laboratory Control Sample	NA	NA	-	
e. Raw GPC Data	NA	NA	-	
f. Raw Florisil Data	NA	NA	-	

**8. Aroclor Data**

**a. QC Summary**

Surrogate Recovery Summary (Form II ARO-1 and ARO-2)	12	13	✓	✓
Matrix Spike/Matrix Spike Duplicate Summary (Form III ARO-1 and ARO-2)	14	15	✓	✓
Laboratory Control Sample Recovery (Form III ARO-3 and ARO-4)	16	17	✓	✓
Method Blank Summary (Form IV ARO)	18	19	✓	✓

**b. Sample Data**

TCL Results - Organics Analysis Data Sheet (Form I ARO)	NA	NA	-	
Chromatograms (Primary Column)	NA	NA	-	
Chromatograms from second GC column confirmation	NA	NA	-	
GC Integration report of data system printout	NA	NA	-	
Manual work sheets	NA	NA	-	
For Aroclors by GC/MS	NA	NA	-	<b>NA</b>

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**ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET  
FORM DC-2**

CASE NO : <b>43392</b>	SDG NO : <b>A4A90</b>	SDG NOs TO FOLLOW : <b>N/A</b>
<b>N/A</b>	<b>N/A</b>	MOD. REF. NO : <b>N/A</b>

Copies of raw spectra and copies of background-subtracted mass spectra of target compounds (samples & standards)

**c. Standards Data**

	92	244		
Aroclors Initial Calibration (Form VI ARO-1, ARO-2, and ARO-3)			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Calibration Verification Summary (Form VII ARO-1)			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Analytical Sequence (Form VIII ARO)			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Identification Summary for Multicomponent Analytes (Form X ARO)			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Chromatograms and data system printouts			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A printout of Retention Times and corresponding peak areas or peak heights			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

**d. Raw QC Data**

Blank Data	245	274	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Matrix Spike/Matrix Spike Duplicate Data	275	290	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Laboratory Control Sample (LCS) Data	291	306	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

**e. Raw GPC Data (if performed)**

NA	NA	<input type="checkbox"/>	<input type="checkbox"/>
----	----	--------------------------	--------------------------

**9. Miscellaneous Data**

Original preparation and analysis forms or copies of preparation and analysis logbook pages	307	364	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Internal sample and sample extract transfer chain-of-custody records	395	396	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Screening records	NA	NA	<input type="checkbox"/>	<input checked="" type="checkbox"/>
All instrument output, including strip charts from screening activities (describe or list)				

**10. EPA Shipping/Receiving Documents**

Airbills (No. of shipments <u>12</u> )	365	376	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Chain of Custody Records	377	379	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Sample Tags	399	408	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Sample Log-in Sheet (Lab & DC-1)	380	394	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Miscellaneous Shipping/Receiving Records (describe or list)				

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET  
FORM DC-2

CASE NO : 43392	SDG NO : A4A90	SDG NOs TO FOLLOW : N/A
N/A	N/A	MOD. REF. NO : N/A

11. Internal Lab Sample Transfer Records and Tracking Sheets (describe or list)

Sample Transfer	395	396	✓	✓
-----------------	-----	-----	---	---

12. Other Records (describe or list)

Telephone Communication Log	NA	NA	-	
PE Instructions	397	398	✓	✓

13. Comments

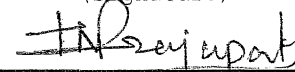
Completed by:  
(CLP Lab)

  
(Signature)

Nimisha Pandya  
(Printed Name/Title)

04/25/13  
(Date)

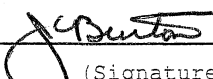
Verified by:  
(CLP Lab)

  
(Signature)

Himanshu Prayapati  
(Printed Name/Title)

04/25/13  
(Date)

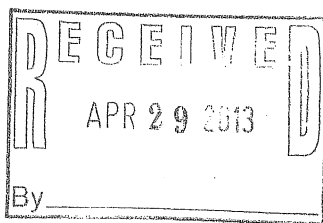
Audited by:  
(USEPA)  
Weston

  
(Signature)

John Burton / Technical Manager  
(Printed Name/Title)

5/1/13  
(Date)

**Evidence Audit Photocopy**



# COPY

EPA NEW ENGLAND  
COMPLETE SDG FILE  
RECEIPT / TRANSFER FORM

Site: Jand Company Inc.

TDD: 12-10-0008

Task: 0850

Case: 43392

SDG: A4A90

Receipt Date	Received By : Name	Init.	Affiliation	CSF Activity	Custody Seals Present / Intact	Released To	Date
4/26/13	Doris Guzman		ESAT	Received for Transfer	(Y) N (Y) N	WESTON	4/26/13
4/29/13	Tara Lambert	<i>ea</i>	Weston	DV / Archive	(Y) N (Y) N		
					Y N Y N		
					Y N Y N		
					Y N Y N		
					Y N Y N		
					Y N Y N		
					Y N Y N		
					Y N Y N		
					Y N Y N		
					Y N Y N		
					Y N Y N		

## EPA-NE - DQO SUMMARY FORM

A separate Form should be completed for each sampling event. Refer to Attachment A for instructions on completing this form, Attachment B for a complete list of the parameter codes and Attachment C for an example of a completed form.

1.	EPA Program: TSCA <u>CERCLA</u> RCRA DW NPDES CAA Other: _____ Projected Date(s) of Sampling <u>Spring (April/May) 2013</u> EPA Site Manager <u>Martha Bosworth</u> EPA Case Team Members _____ _____ _____	Site Name <u>Jard Company Inc</u> Site Location <u>Bennington, Vermont</u> Assigned Site Latitude/Longitude <u>42° 53' 21.5" north/73° 11' 21.9" west</u> CERCLA Site/Spill Identifier No <u>VTDO48141741</u> (Include Operable Unit) Phase: ERA SA/SI pre-RI RI (phase I, etc.) FS RD RA post-RA (circle one) Other: <u>Site Reassessment</u>																																																																																																																																																																																		
2.	QAPP Title and Revision Date <u>Site Assessment Program Site Specific Quality Assurance Project Plan for Surface and Subsurface Soil/Source, Ground Water, and Sediment Sampling Jard Company Inc, Bennington, Vermont dated 11 January 2013</u> Approved by: <u>Martha Bosworth</u> Date of Approval: <u>TBD</u> Title of Approving Official: <u>Site Assessment Manager</u> Organization*: <u>EPA</u> *If other than EPA, record date approval authority was delegated: _____  EPA Oversight Project (circle one) <u>Y</u> <u>N</u> Type of EPA Oversight (circle one) PRP or FF Other: _____ Confirmatory Analysis for Field Screening <u>Y</u> <u>N</u> If EPA Oversight or Confirmatory: % splits <u>TBD</u> Are comparability criteria documented? <u>Y</u> <u>N</u>																																																																																																																																																																																			
3. a.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Matrix Code<sup>1</sup></td> <td style="width: 10%;">SO</td> <td style="width: 10%;">SO</td> <td style="width: 10%;">SO</td> <td style="width: 10%;">GW</td> <td style="width: 10%;">GW</td> <td style="width: 10%;">SD</td> <td style="width: 10%;">SD</td> <td style="width: 10%;">SD</td> </tr> <tr> <td>b. Parameter Code<sup>2</sup></td> <td>PCB Aroclors</td> <td>PCB Aroclors</td> <td>PCB Congeners</td> <td>PCB Aroclors</td> <td>PCB Congeners</td> <td>PCB Aroclors</td> <td>PCB Aroclors</td> <td>PCB Congeners</td> </tr> <tr> <td>c. Preservation Code<sup>3</sup></td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> </tr> <tr> <td>d. Analytical Services Mechanism</td> <td>DAS or CLP</td> <td>DAS or CLP</td> <td>CLP</td> <td>DAS or CLP</td> <td>DAS or CLP</td> <td>DAS or CLP</td> <td>DAS or CLP</td> <td>CLP</td> </tr> <tr> <td>e. No. of Sample Locations</td> <td>65</td> <td>28</td> <td>2</td> <td>21</td> <td>2</td> <td>60</td> <td>60</td> <td>60</td> </tr> <tr> <td colspan="9"><b>Field QC:</b></td> </tr> <tr> <td>f. Field Duplicate Pairs</td> <td>4</td> <td>2</td> <td></td> <td>2</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> </tr> <tr> <td>g. Equipment Blanks</td> <td>See RB</td> <td>See RB</td> <td>See RB</td> <td>See RB</td> <td>See RB</td> <td>See RB</td> <td>See RB</td> <td>See RB</td> </tr> <tr> <td>h. VOA Trip Blanks</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>i. Cooler Temperature Blanks</td> <td>1 per cooler</td> <td>1 per cooler</td> <td>1 per cooler</td> <td>1 per cooler</td> <td>1 per cooler</td> <td>1 per cooler</td> <td>1 per cooler</td> <td>1 per cooler</td> </tr> <tr> <td>j. Bottle Blanks</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>k. Other: _____</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>l. PES sent to Laboratory</td> <td>NA</td> <td>6</td> <td>TBD</td> <td>3</td> <td>TBD</td> <td>NA</td> <td>3</td> <td>TBD</td> </tr> <tr> <td colspan="9"><b>Laboratory QC:</b></td> </tr> <tr> <td>m. Reagent Blank</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>n. Duplicate</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>o. Matrix Spike</td> <td>0</td> <td>2</td> <td>0</td> <td>1</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>p. Matrix Spike Duplicate</td> <td>0</td> <td>2</td> <td>0</td> <td>1</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>q. Other: _____</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>									Matrix Code <sup>1</sup>	SO	SO	SO	GW	GW	SD	SD	SD	b. Parameter Code <sup>2</sup>	PCB Aroclors	PCB Aroclors	PCB Congeners	PCB Aroclors	PCB Congeners	PCB Aroclors	PCB Aroclors	PCB Congeners	c. Preservation Code <sup>3</sup>	5	5	5	5	5	5	5	5	d. Analytical Services Mechanism	DAS or CLP	DAS or CLP	CLP	DAS or CLP	DAS or CLP	DAS or CLP	DAS or CLP	CLP	e. No. of Sample Locations	65	28	2	21	2	60	60	60	<b>Field QC:</b>									f. Field Duplicate Pairs	4	2		2	5	5	5	5	g. Equipment Blanks	See RB	See RB	See RB	See RB	See RB	See RB	See RB	See RB	h. VOA Trip Blanks	0	0	0	0	0	0	0	0	i. Cooler Temperature Blanks	1 per cooler	1 per cooler	1 per cooler	1 per cooler	1 per cooler	1 per cooler	1 per cooler	1 per cooler	j. Bottle Blanks	0	0	0	0	0	0	0	0	k. Other: _____									l. PES sent to Laboratory	NA	6	TBD	3	TBD	NA	3	TBD	<b>Laboratory QC:</b>									m. Reagent Blank	0	0	0	0	0	0	0	0	n. Duplicate	0	0	0	0	0	0	0	0	o. Matrix Spike	0	2	0	1	0	1	0	0	p. Matrix Spike Duplicate	0	2	0	1	0	1	0	0	q. Other: _____								
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m. Reagent Blank	0	0	0	0	0	0	0	0																																																																																																																																																																												
n. Duplicate	0	0	0	0	0	0	0	0																																																																																																																																																																												
o. Matrix Spike	0	2	0	1	0	1	0	0																																																																																																																																																																												
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4.	Site Information Site Dimensions <u>Approximately 11.26 acres</u> List all potentially contaminated matrices <u>Surface and subsurface soil, sediment, ground water, and residential surface soil</u> Range of Depth to Groundwater <u>greater than 5 feet</u> Soil Types: <u>Surface</u> <u>Subsurface</u> Other: <u>(circle one)</u> Sediment Types: <u>Stream</u> <u>Pond</u> <u>Estuary</u> <u>Wetland</u> Other: _____ Expected Soil/Sediment Moisture Content: <u>High</u> <u>Low</u>																																																																																																																																																																																			



1. EPA Program: TSCA <u>CERCLA</u> RCRA DW NPDES CAA Other: _____ Projected Date(s) of Sampling <u>Spring (April/May) 2013</u> EPA Site Manager <u>Martha Bosworth</u> EPA Case Team Members: _____ _____	Site Name <u>Jard Company Inc</u> Site Location <u>Bennington, Vermont</u> Assigned Site Latitude/Longitude <u>42° 53' 21.5" north/73° 11' 21.9" west</u> CERCLA Site/Spill Identifier No <u>VT048141741</u> (Include Operable Unit) Phase: ERA <u>SA/SI</u> pre-RI RI (phase I, etc.) FS RD RA post-RA (circle one) Other: <u>Site Reassessment</u>								
2. QAPP Title and Revision Date <u>Site Assessment Program Site Specific Quality Assurance Project Plan for Surface and Subsurface Soil/Source, Ground Water, and Sediment Sampling Jard Company Inc, Bennington, Vermont dated 11 January 2013</u> Approved by: <u>Martha Bosworth</u> Date of Approval: <u>TBD</u> Title of Approving Official: <u>Site Assessment Manager</u> Organization*: <u>EPA</u> *If other than EPA, record date approval authority was delegated: _____  EPA Oversight Project (circle one) <u>Y</u> <u>N</u> Type of EPA Oversight (circle one) PRP or FF Other: _____ Confirmatory Analysis for Field Screening <u>Y</u> <u>N</u> If EPA Oversight or Confirmatory: % splits <u>TBD</u> Are comparability criteria documented? <u>Y</u> <u>N</u>									
3. a.	Matrix Code <sup>1</sup>	SS	SS	SS	RB				
b.	Parameter Code <sup>2</sup>	PCB Aroclors	PCB Aroclors	PCB Congeners	PCB Aroclors				
c.	Preservation Code <sup>3</sup>	5	5	5	5				
d.	Analytical Services Mechanism	DAS or CLP	DAS or CLP	CLP	CLP Non- RAS				
e.	No. of Sample Locations	125	38	2	21				
<b>Field QC:</b>									
f.	Field Duplicate Pairs	7	2		0				
g.	Equipment Blanks	See RB	See RB	See RB	0				
h.	VOA Trip Blanks	0	0	0	0				
i.	Cooler Temperature Blanks	1 per cooler	1 per cooler	1 per cooler	1 per cooler				
j.	Bottle Blanks	0	0	0	0				
k.	Other: _____								
l.	PES sent to Laboratory	NA	6	TBD	0				
<b>Laboratory QC:</b>									
m.	Reagent Blank	0	0	0	0				
n.	Duplicate	0	0	0	0				
o.	Matrix Spike	0	2	0	0				
p.	Matrix Spike Duplicate	0	2	0					
q.	Other: _____								
4. Site Information Site Dimensions <u>Approximately 11.26 acres</u> List all potentially contaminated matrices <u>Surface and subsurface soil, sediment, ground water, and residential surface soil</u> Range of Depth to Groundwater <u>greater than 5 feet</u> Soil Types: <u>Surface</u> <u>Subsurface</u> Other: _____ Sediment Types: Stream Pond Estuary Wetland Other: _____ Expected Soil/Sediment Moisture Content: <u>High</u> Low									

When multiple matrices will be sampled during a sampling event, complete Sections 5-10 for each matrix.

Matrix Code<sup>1</sup> SO

5. Data Use (circle all that apply) Site Investigation/Assessment PRP Determination  
 Nature and Extent of Contamination Human and/or Ecological Risk Assessment Removal Actions  
 Engineering Design Remedial Action  
 Post-Remedial Action (quarterly monitoring) Other: \_\_\_\_\_

Draft DQO Summary Form 11/96

6. Summarize DQOs: Collect surface and subsurface soil/source samples from the identified source area (capped former building footprint and excavated staged material) on the property for PCB Aroclors field screening and fixed based laboratory analysis in source areas on the Jard Company Inc property. A subset of samples will be submitted for fixed laboratory analysis with a smaller subset submitted for PCB Congener analysis.

Complete Table if applicable

COCs	Action Levels	Analytical Method-Quantitation Limits
PCB Aroclors (Field Screening)	Above Background (Assumed to be ND)	0.2 mg/Kg
PCB Aroclors (Fixed Lab)	Above Background (Assumed to be ND)	33 ug/kg
PCB Congeners	Above Background (Assumed to be ND)	20 to 100 ng/Kg

7. Sampling Method (circle technique) Bailer Low flow pump (Region I method: Yes No) Peristaltic Pump  
 Positive Displacement Pump Faucet or Spigot Other: \_\_\_\_\_  
 Split Spoon Dredge Trowel Other: Direct sampling \_\_\_\_\_
- Sampling Procedures (SOP name, No., Rev. #, and date) \_\_\_\_\_  
 List Background Sample Locations NA for source samples \_\_\_\_\_  
 Circle: Grab or Composite \_\_\_\_\_  
 "Hot spots" sampled: Yes No

8. Field Data (circle) ORP pH Specific Conductance Dissolved O<sub>2</sub> Temperature Turbidity  
 Other: \_\_\_\_\_

9. Analytical Methods and Parameters

Method title/SOP name	Method/SOP Identification number	Revision Date	Target Parameters (VOA, SV, Pest/PCB, Metals, etc.)
PCB Aroclors (Field Screening)	EIA-FLDPCB2.SOP		PCBs
PCB Aroclors	SOM01.2 or DAS Equivalent		PCBs
PCB Congeners	CBC01.0		PCB Congeners

10. Validation Criteria (circle one) 1. Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part II, III or IV  
 2. Other Approved Validation Criteria: \_\_\_\_\_  
 Validation Tier (circle one) I II III Partial Tier III: \_\_\_\_\_  
 Company/Organization Performing Data Validation Weston Solutions, Inc./START III Prime or Subcontractor (circle one)

11. Company Name Weston Solutions, Inc. Contract Number EP-W-05-042  
 Contract Name (e.g. START, RACS, etc.) START III Work Assignment No. 20114-081-998-0850  
 Person Completing Form/Title G. Hornok/Lead Project Scientist Date of DQO Summary Form Completion 11 January 2013

When multiple matrices will be sampled during a sampling event, complete Sections 5-10 for each matrix.

Matrix Code<sup>1</sup> GW

5. Data Use (circle all that apply) Site Investigation/Assessment PRP Determination  
 Nature and Extent of Contamination Human and/or Ecological Risk Assessment Removal Actions  
 Engineering Design Remedial Action Remediation Alternatives  
 Post-Remedial Action (quarterly monitoring) Other: \_\_\_\_\_

Draft DQO Summary Form 11/96

6. Summarize DQOs: Collect ground water samples from ground water monitoring wells previously installed on and off the property for PCB Aroclors fixed based laboratory analysis. A subset of samples will be submitted for PCB Congener analysis.

Complete Table if applicable

COCs	Action Levels	Analytical Method-Quantitation Limits
PCB Aroclors (Fixed Lab)	Above Background (Assumed to be ND)	1.0 µg/L
PCB Congeners	Above Background (Assumed to be ND)	100 to 1,000 pg/L

7. Sampling Method (circle technique) Bailer Low flow pump (Region I method: Yes No) Peristaltic Pump  
Positive Displacement Pump Faucet or Spigot Other: \_\_\_\_\_  
Split Spoon Dredge Trowel Other: \_\_\_\_\_  
 Sampling Procedures (SOP name, No., Rev. #, and date) \_\_\_\_\_  
 List Background Sample Locations Ground Water monitoring wells TBD  
 Circle: Grab or Composite \_\_\_\_\_  
 "Hot spots" sampled: Yes No

8. Field Data (circle) ORP pH Specific Conductance Dissolved O<sub>2</sub> Temperature Turbidity  
 Other: \_\_\_\_\_

9. Analytical Methods and Parameters

Method title/SOP name	Method/SOP Identification number	Revision Date	Target Parameters (VOA, SV, Pest/PCB, Metals, etc.)
PCB Aroclors	SOM01.2 or DAS Equivalent		PCBs
PCB Congeners	CBC01.0		PCB Congeners

10. Validation Criteria (circle one) 1. Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part II, III or IV  
 2. Other Approved Validation Criteria: \_\_\_\_\_  
 Validation Tier (circle one) I II III Partial Tier III: \_\_\_\_\_  
 Company/Organization Performing Data Validation Weston Solutions, Inc./START III Prime or Subcontractor (circle one)

11. Company Name Weston Solutions, Inc. Contract Number EP-W-05-042  
 Contract Name (e.g. START, RACS, etc.) START III Work Assignment No. 20114-081-998-0850  
 Person Completing Form/Title G. Hornok/Lead Project Scientist Date of DQO Summary Form Completion 11 January 2013

When multiple matrices will be sampled during a sampling event, complete Sections 5-10 for each matrix.

Matrix Code<sup>1</sup> SD

5. Data Use (circle all that apply) Site Investigation/Assessment PRP Determination

Removal Actions

Nature and Extent of Contamination Human and/or Ecological Risk Assessment Remediation Alternatives

Engineering Design Remedial Action

Post-Remedial Action (quarterly monitoring)

Other: \_\_\_\_\_

Draft DQO Summary Form 11/96

6. Summarize DQOs: Collect sediment samples from a wetland located west of Park Street for PCB Aroclors field screening and fixed based laboratory analysis. A subset of samples will be submitted for fixed laboratory analysis with a smaller subset submitted for PCB Congener analysis.

Complete Table if applicable

COCs	Action Levels	Analytical Method-Quantitation Limits
PCB Aroclors (Field Screening)	Above Background (Assumed to be ND)	0.2 mg/Kg
PCB Aroclors (Fixed Lab)	Above Background (Assumed to be ND)	33 ug/kg
PCB Congeners	Above Background (Assumed to be ND)	20 to 100 ng/Kg

7. Sampling Method (circle technique)

Bailer Low flow pump (Region I method: Yes No)  
Positive Displacement Pump Faucet or Spigot  
Split Spoon Dredge Trowel

Peristaltic Pump  
Other: Direct sampling

Sampling Procedures (SOP name, No., Rev. #, and date)

List Background Sample Locations Wetland area northeast of the Jard Company Inc property

Circle Grab or Composite

"Hot spots" sampled: Yes No

8. Field Data (circle) ORP pH Specific Conductance Dissolved O<sub>2</sub> Temperature Turbidity

Other: \_\_\_\_\_

9. Analytical Methods and Parameters

Method title/SOP name	Method/SOP Identification number	Revision Date	Target Parameters (VOA, SV, Pest/PCB, Metals, etc.)
PCB Aroclors (Field Screening)	SOM01.2		PCBs
PCB Aroclors	SOM01.2 or DAS Equivalent		PCBs
Total Metals (including Hg)	CBC01.0		PCB Congeners

10. Validation Criteria (circle one) 1. Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part II, III or IV

2. Other Approved Validation Criteria:

Validation Tier (circle one) I II III Partial Tier III:

Company/Organization Performing Data Validation Weston Solutions, Inc./START III Prime or Subcontractor (circle one)

11. Company Name Weston Solutions, Inc. Contract Number EP-W-05-042

Contract Name (e.g. START, RACS, etc.) START III Work Assignment No. 20114-081-998-0850

Person Completing Form/Title G. Hornok/Lead Project Scientist Date of DQO Summary Form Completion 11 January 2013

When multiple matrices will be sampled during a sampling event, complete Sections 5-10 for each matrix.

Matrix Code<sup>1</sup> SS

5. Data Use (circle all that apply) Site Investigation/Assessment PRP Determination Removal Actions  
 Nature and Extent of Contamination Human and/or Ecological Risk Assessment Remediation Alternatives  
 Engineering Design Remedial Action  
 Post-Remedial Action (quarterly monitoring) Other: \_\_\_\_\_

Draft DQO Summary Form 11/96

6. Summarize DQOs: Collect surface soil samples from residential properties downgradient of the Jard Company Inc property and within 200 feet of the residences for PCB Aroclors field screening and fixed based laboratory analysis in source areas on the Jard Company Inc property. A subset of samples will be submitted for fixed laboratory analysis with a smaller subset submitted for PCB Congener analysis.

Complete Table if applicable

COCs	Action Levels	Analytical Method-Quantitation Limits
PCB Aroclors (Field Screening)	Above Background (Assumed to be ND)	0.2 mg/Kg
PCB Aroclors (Fixed Lab)	Above Background (Assumed to be ND)	33 ug/kg
PCB Congeners	Above Background (Assumed to be ND)	20 to 100 ng/Kg

7. Sampling Method (circle technique) Bailer Low flow pump (Region I method: Yes No) Peristaltic Pump  
 Positive Displacement Pump Faucet or Spigot Other: \_\_\_\_\_  
 Split Spoon Dredge Trowel Other: Direct sampling
- Sampling Procedures (SOP name, No., Rev. #, and date) \_\_\_\_\_  
 List Background Sample Locations Residential properties located north of the Jard Company Inc property  
 Circle: Grab or Composite \_\_\_\_\_  
 "Hot spots" sampled: Yes No

8. Field Data (circle) ORP pH Specific Conductance Dissolved O<sub>2</sub> Temperature Turbidity  
 Other: \_\_\_\_\_

9. Analytical Methods and Parameters

Method title/SOP name	Method/SOP Identification number	Revision Date	Target Parameters (VOA, SV, Pest/PCB, Metals, etc.)
PCB Aroclors (Field Screening)	SOM01.2		PCBs
PCB Aroclors	SOM01.2 or DAS Equivalent		PCBs
Total Metals (including Hg)	CBC01.0		PCB Congeners

10. Validation Criteria (circle one) 1. Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part II, III or IV  
 2. Other Approved Validation Criteria: \_\_\_\_\_  
 Validation Tier (circle one) I II III Partial Tier III: \_\_\_\_\_  
 Company/Organization Performing Data Validation Weston Solutions, Inc./START III Prime or Subcontractor (circle one)

11. Company Name Weston Solutions, Inc. Contract Number EP-W-05-042  
 Contract Name (e.g. START, RACS, etc.) START III Work Assignment No. 20114-081-998-0850  
 Person Completing Form/Title G. Hornok/Lead Project Scientist Date of DQO Summary Form Completion 11 January 2013

Matrix Codes<sup>1</sup> - Refer to Attachment B, Part I  
 Parameter Codes<sup>2</sup> - Refer to Attachment B, Part II

Preservation Codes<sup>3</sup>

- |                                   |  |
|-----------------------------------|--|
| 1. HCl to pH ≤ 2                  | 7. K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> |
| 2. HNO <sub>3</sub>               | 8. Freeze  |
| 3. NaHSO <sub>4</sub>             | 9. Room Temperature (avoid excessive heat)       |
| 4. H <sub>2</sub> SO <sub>4</sub> | 10. Other (Specify)                              |
| 5. Cool @ 4C (± 2)                | N. Not preserved                                 |
| 6. NaOH                           |  |

\* - To supplement Matrix Codes and/or Parameter Codes contact the QA Unit

Attachment C

Original Analytical Results (Form I's)  
Case No. 43392; SDG No. A4A90

1H - FORM I ARO  
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4A90

Lab Name: Chemtech Contract: EPW11030  
 Lab Code: CHEM Case No.: 43392 Mod. Ref No.: \_\_\_\_\_ SDG No.: A4A90  
 Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1725-01  
 Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: PO008311.D  
 % Moisture: \_\_\_\_\_ Decanted: (Y/N) \_\_\_\_\_ Date Received: 04/04/2013  
 Extraction: (Type) SEPF Date Extracted: 04/05/2013  
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/05/2013  
 Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N pH: N/A Sulfur Cleanup: (Y/N) N  
 Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
12674-11-2	Aroclor-1016		1.0	U
11104-28-2	Aroclor-1221		1.0	U
11141-16-5	Aroclor-1232		1.0	U
53469-21-9	Aroclor-1242		1.0	U
12672-29-6	Aroclor-1248		1.0	U
11097-69-1	Aroclor-1254		1.0	U
11096-82-5	Aroclor-1260		1.0	U
37324-23-5	Aroclor-1262		1.0	U
11100-14-4	Aroclor-1268		1.0	U

1H - FORM I ARO  
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4A91

Lab Name: Chemtech Contract: EPW11030  
 Lab Code: CHEM Case No.: 43392 Mod. Ref No.:                      SDG No.: A4A90  
 Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1725-02  
 Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: PO008312.D  
 % Moisture:            Decanted: (Y/N)            Date Received: 04/04/2013  
 Extraction: (Type) SEPF Date Extracted: 04/05/2013  
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/05/2013  
 Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N pH: N/A Sulfur Cleanup: (Y/N) N  
 Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
12674-11-2	Aroclor-1016		1.0	U
11104-28-2	Aroclor-1221		1.0	U
11141-16-5	Aroclor-1232		1.0	U
53469-21-9	Aroclor-1242		1.0	U
12672-29-6	Aroclor-1248		1.0	U
11097-69-1	Aroclor-1254		1.0	U
11096-82-5	Aroclor-1260		1.0	U
37324-23-5	Aroclor-1262		1.0	U
11100-14-4	Aroclor-1268		1.0	U



1H - FORM I ARO  
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4A92

Lab Name: Chemtech Contract: EPW11030

Lab Code: CHEM Case No.: 43392 Mod. Ref No.: \_\_\_\_\_ SDG No.: A4A90

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1725-03

Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: PO008313.D

% Moisture: \_\_\_\_\_ Decanted: (Y/N) \_\_\_\_\_ Date Received: 04/04/2013

Extraction: (Type) SEPF Date Extracted: 04/05/2013

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/05/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: N/A Sulfur Cleanup: (Y/N) N

Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
12674-11-2	Aroclor-1016		1.0	U
11104-28-2	Aroclor-1221		1.0	U
11141-16-5	Aroclor-1232		1.0	U
53469-21-9	Aroclor-1242		1.0	U
12672-29-6	Aroclor-1248		1.0	U
11097-69-1	Aroclor-1254		1.0	U
11096-82-5	Aroclor-1260		1.0	U
37324-23-5	Aroclor-1262		1.0	U
11100-14-4	Aroclor-1268		1.0	U

1H - FORM I ARO  
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4A97

Lab Name: Chemtech Contract: EPW11030  
 Lab Code: CHEM Case No.: 43392 Mod. Ref No.: \_\_\_\_\_ SDG No.: A4A90  
 Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1725-04  
 Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: PO008361.D  
 % Moisture: \_\_\_\_\_ Decanted: (Y/N) \_\_\_\_\_ Date Received: 04/04/2013  
 Extraction: (Type) SEPF Date Extracted: 04/05/2013  
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/08/2013  
 Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N pH: N/A Sulfur Cleanup: (Y/N) N  
 Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
12674-11-2	Aroclor-1016		1.0	U
11104-28-2	Aroclor-1221		1.0	U
11141-16-5	Aroclor-1232		1.0	U
53469-21-9	Aroclor-1242		9.0	
12672-29-6	Aroclor-1248		1.0	U
11097-69-1	Aroclor-1254		1.0	U
11096-82-5	Aroclor-1260		1.0	U
37324-23-5	Aroclor-1262		1.0	U
11100-14-4	Aroclor-1268		1.0	U

1H - FORM I ARO  
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4A98

Lab Name: Chemtech Contract: EPW11030  
 Lab Code: CHEM Case No.: 43392 Mod. Ref No.: \_\_\_\_\_ SDG No.: A4A90  
 Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1725-05  
 Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: PO008315.D  
 % Moisture: \_\_\_\_\_ Decanted: (Y/N) \_\_\_\_\_ Date Received: 04/04/2013  
 Extraction: (Type) SEPF Date Extracted: 04/05/2013  
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/05/2013  
 Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N pH: N/A Sulfur Cleanup: (Y/N) N  
 Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
12674-11-2	Aroclor-1016		1.0	U
11104-28-2	Aroclor-1221		1.0	U
11141-16-5	Aroclor-1232		1.0	U
53469-21-9	Aroclor-1242		1.0	U
12672-29-6	Aroclor-1248		1.0	U
11097-69-1	Aroclor-1254		1.0	U
11096-82-5	Aroclor-1260		1.0	U
37324-23-5	Aroclor-1262		1.0	U
11100-14-4	Aroclor-1268		1.0	U

1H - FORM I ARO  
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4A99

Lab Name: Chemtech Contract: EPW11030  
 Lab Code: CHEM Case No.: 43392 Mod. Ref No.:                      SDG No.: A4A90  
 Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1725-06  
 Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: PO008316.D  
 % Moisture:            Decanted: (Y/N)            Date Received: 04/04/2013  
 Extraction: (Type) SEPF Date Extracted: 04/05/2013  
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/05/2013  
 Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N pH: 6 Sulfur Cleanup: (Y/N) N  
 Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
12674-11-2	Aroclor-1016		1.0	U
11104-28-2	Aroclor-1221		1.0	U
11141-16-5	Aroclor-1232		1.0	U
53469-21-9	Aroclor-1242		1.0	U
12672-29-6	Aroclor-1248		1.0	U
11097-69-1	Aroclor-1254		1.0	U
11096-82-5	Aroclor-1260		1.0	U
37324-23-5	Aroclor-1262		1.0	U
11100-14-4	Aroclor-1268		1.0	U

1H - FORM I ARO  
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4B00

Lab Name: Chemtech Contract: EPW11030  
 Lab Code: CHEM Case No.: 43392 Mod. Ref No.:                      SDG No.: A4A90  
 Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1725-09  
 Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: PO008360.D  
 % Moisture:            Decanted: (Y/N)            Date Received: 04/04/2013  
 Extraction: (Type) SEPF Date Extracted: 04/05/2013  
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/08/2013  
 Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N pH: N/A Sulfur Cleanup: (Y/N) N  
 Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
12674-11-2	Aroclor-1016		1.0	U
11104-28-2	Aroclor-1221		1.0	U
11141-16-5	Aroclor-1232		1.0	U
53469-21-9	Aroclor-1242		9.4	
12672-29-6	Aroclor-1248		1.0	U
11097-69-1	Aroclor-1254		1.0	U
11096-82-5	Aroclor-1260		1.0	U
37324-23-5	Aroclor-1262		1.0	U
11100-14-4	Aroclor-1268		1.0	U

1H - FORM I ARO  
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4A93

Lab Name: Chemtech Contract: EPW11030  
 Lab Code: CHEM Case No.: 43392 Mod. Ref No.:                      SDG No.: A4A90  
 Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1725-14  
 Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: PO008368.D  
 % Moisture:            Decanted: (Y/N)            Date Received: 04/04/2013  
 Extraction: (Type) SEPF Date Extracted: 04/05/2013  
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/08/2013  
 Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N pH: N/A Sulfur Cleanup: (Y/N) N  
 Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
12674-11-2	Aroclor-1016		1.0	U
11104-28-2	Aroclor-1221		1.0	U
11141-16-5	Aroclor-1232		1.0	U
53469-21-9	Aroclor-1242		76	E
12672-29-6	Aroclor-1248		1.0	U
11097-69-1	Aroclor-1254		1.0	U
11096-82-5	Aroclor-1260		1.0	U
37324-23-5	Aroclor-1262		1.0	U
11100-14-4	Aroclor-1268		1.0	U

1H - FORM I ARO  
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4A93DL

Lab Name: Chemtech Contract: EPW11030  
 Lab Code: CHEM Case No.: 43392 Mod. Ref No.: \_\_\_\_\_ SDG No.: A4A90  
 Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1725-14DL  
 Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: PO008369.D  
 % Moisture: \_\_\_\_\_ Decanted: (Y/N) \_\_\_\_\_ Date Received: 04/04/2013  
 Extraction: (Type) SEPF Date Extracted: 04/05/2013  
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/08/2013  
 Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 20.0  
 GPC Cleanup: (Y/N) N pH: N/A Sulfur Cleanup: (Y/N) N  
 Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
12674-11-2	Aroclor-1016		20	U
11104-28-2	Aroclor-1221		20	U
11141-16-5	Aroclor-1232		20	U
53469-21-9	Aroclor-1242		93	D
12672-29-6	Aroclor-1248		20	U
11097-69-1	Aroclor-1254		20	U
11096-82-5	Aroclor-1260		20	U
37324-23-5	Aroclor-1262		20	U
11100-14-4	Aroclor-1268		20	U

1H - FORM I ARO  
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4A94

Lab Name: Chemtech Contract: EPW11030  
 Lab Code: CHEM Case No.: 43392 Mod. Ref No.: \_\_\_\_\_ SDG No.: A4A90  
 Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1725-15  
 Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: PO008370.D  
 % Moisture: \_\_\_\_\_ Decanted: (Y/N) \_\_\_\_\_ Date Received: 04/04/2013  
 Extraction: (Type) SEPF Date Extracted: 04/05/2013  
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/08/2013  
 Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N pH: N/A Sulfur Cleanup: (Y/N) N  
 Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
12674-11-2	Aroclor-1016		1.0	U
11104-28-2	Aroclor-1221		1.0	U
11141-16-5	Aroclor-1232		1.0	U
53469-21-9	Aroclor-1242		150	E
12672-29-6	Aroclor-1248		1.0	U
11097-69-1	Aroclor-1254		1.0	U
11096-82-5	Aroclor-1260		1.0	U
37324-23-5	Aroclor-1262		1.0	U
11100-14-4	Aroclor-1268		1.0	U



1H - FORM I ARO  
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4A94DL

Lab Name: Chemtech Contract: EPW11030  
 Lab Code: CHEM Case No.: 43392 Mod. Ref No.:                      SDG No.: A4A90  
 Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1725-15DL  
 Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: PO008371.D  
 % Moisture:            Decanted: (Y/N)            Date Received: 04/04/2013  
 Extraction: (Type) SEPF Date Extracted: 04/05/2013  
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/08/2013  
 Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 20.0  
 GPC Cleanup: (Y/N) N pH: N/A Sulfur Cleanup: (Y/N) N  
 Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
12674-11-2	Aroclor-1016		20	U
11104-28-2	Aroclor-1221		20	U
11141-16-5	Aroclor-1232		20	U
53469-21-9	Aroclor-1242		180	D
12672-29-6	Aroclor-1248		20	U
11097-69-1	Aroclor-1254		20	U
11096-82-5	Aroclor-1260		20	U
37324-23-5	Aroclor-1262		20	U
11100-14-4	Aroclor-1268		20	U

1H - FORM I ARO  
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4A95

Lab Name: Chemtech Contract: EPW11030  
 Lab Code: CHEM Case No.: 43392 Mod. Ref No.:                      SDG No.: A4A90  
 Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1725-16  
 Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: PO008372.D  
 % Moisture:            Decanted: (Y/N)            Date Received: 04/04/2013  
 Extraction: (Type) SEPF Date Extracted: 04/05/2013  
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/08/2013  
 Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N pH: N/A Sulfur Cleanup: (Y/N) N  
 Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
12674-11-2	Aroclor-1016		1.0	U
11104-28-2	Aroclor-1221		1.0	U
11141-16-5	Aroclor-1232		1.0	U
53469-21-9	Aroclor-1242		24	E
12672-29-6	Aroclor-1248		1.0	U
11097-69-1	Aroclor-1254		1.0	U
11096-82-5	Aroclor-1260		1.0	U
37324-23-5	Aroclor-1262		1.0	U
11100-14-4	Aroclor-1268		1.0	U

1H - FORM I ARO  
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4A95DL

Lab Name: Chemtech Contract: EPW11030  
 Lab Code: CHEM Case No.: 43392 Mod. Ref No.:                      SDG No.: A4A90  
 Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1725-16DL  
 Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: PO008373.D  
 % Moisture:            Decanted: (Y/N)            Date Received: 04/04/2013  
 Extraction: (Type) SEPF Date Extracted: 04/05/2013  
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/08/2013  
 Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 20.0  
 GPC Cleanup: (Y/N) N pH: N/A Sulfur Cleanup: (Y/N) N  
 Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
12674-11-2	Aroclor-1016		20	U
11104-28-2	Aroclor-1221		20	U
11141-16-5	Aroclor-1232		20	U
53469-21-9	Aroclor-1242		98	D
12672-29-6	Aroclor-1248		20	U
11097-69-1	Aroclor-1254		20	U
11096-82-5	Aroclor-1260		20	U
37324-23-5	Aroclor-1262		20	U
11100-14-4	Aroclor-1268		20	U

1H - FORM I ARO  
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4A96

Lab Name: Chemtech Contract: EPW11030  
 Lab Code: CHEM Case No.: 43392 Mod. Ref No.: \_\_\_\_\_ SDG No.: A4A90  
 Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1725-17  
 Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: PO008374.D  
 % Moisture: \_\_\_\_\_ Decanted: (Y/N) \_\_\_\_\_ Date Received: 04/04/2013  
 Extraction: (Type) SEPF Date Extracted: 04/05/2013  
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/08/2013  
 Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N pH: N/A Sulfur Cleanup: (Y/N) N  
 Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
12674-11-2	Aroclor-1016		1.0	U
11104-28-2	Aroclor-1221		1.0	U
11141-16-5	Aroclor-1232		1.0	U
53469-21-9	Aroclor-1242		27	EP
12672-29-6	Aroclor-1248		1.0	U
11097-69-1	Aroclor-1254		1.0	U
11096-82-5	Aroclor-1260		1.0	U
37324-23-5	Aroclor-1262		1.0	U
11100-14-4	Aroclor-1268		1.0	U

1H - FORM I ARO  
 AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4A96DL

Lab Name: Chemtech Contract: EPW11030  
 Lab Code: CHEM Case No.: 43392 Mod. Ref No.:                      SDG No.: A4A90  
 Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: E1725-17DL  
 Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: PO008375.D  
 % Moisture:            Decanted: (Y/N)            Date Received: 04/04/2013  
 Extraction: (Type) SEPF Date Extracted: 04/05/2013  
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/08/2013  
 Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 5.0  
 GPC Cleanup: (Y/N) N pH: N/A Sulfur Cleanup: (Y/N) N  
 Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
12674-11-2	Aroclor-1016		5.0	U
11104-28-2	Aroclor-1221		5.0	U
11141-16-5	Aroclor-1232		5.0	U
53469-21-9	Aroclor-1242		26	DP
12672-29-6	Aroclor-1248		5.0	U
11097-69-1	Aroclor-1254		5.0	U
11096-82-5	Aroclor-1260		5.0	U
37324-23-5	Aroclor-1262		5.0	U
11100-14-4	Aroclor-1268		5.0	U

Attachment D

USEPA Contract Laboratory Program Statement of Work for Organic Analysis,  
Multi-Media Multi-Concentration, SOM01.2 (Excerpt)  
and  
Modifications Updating SOM01.1 to SOM01.2, October 5, 2006, Updated 02-12-2007,  
Amended 04-11-2007 (Excerpt)

4.0 AROCLORS TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS<sup>1</sup>

Aroclors	CAS Number	Quantitation Limits	
		Water	Soil
		ug/L	ug/kg
141. Aroclor-1016	12674-11-2	1.0	33
142. Aroclor-1221	11104-28-2	1.0	33
143. Aroclor-1232	11141-16-5	1.0	33
144. Aroclor-1242	53469-21-9	1.0	33
145. Aroclor-1248	12672-29-6	1.0	33
146. Aroclor-1254	11097-69-1	1.0	33
147. Aroclor-1260	11096-82-5	1.0	33
148. Aroclor-1262	37324-23-5	1.0	33
149. Aroclor-1268	11100-14-4	1.0	33

<sup>1</sup>There is no differentiation between the preparation of low and medium soil samples in this method for the analysis of Aroclors.

EXHIBIT D – AROCLORS	
EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><i>Aro-Item 1</i> Exhibit D - Aroclor: Section 7.2.3.4.1</p>	<p>The following Section:</p> <p>“Prepare five-point initial calibration standard solutions containing a mixture of Aroclors 1016 and 1260 at the following suggested levels: 100; 200; 400; 800; and 1600 ng/mL and surrogates at 5.0, 10, 20, 40 and 80 ng/mL for tetrachloro-m-xylene and 10, 20, 40, 80 and 160 ng/mL for decachlorobiphenyl. Also, prepare a single-point initial calibration standard solution containing Aroclors 1221, 1232, 1242, 1248, 1254, 1262, and 1268 at 400 ng/mL and surrogates at 20 ng/mL for tetrachloro-m-xylene and 40 ng/mL for decachlorobiphenyl. The solutions must be prepared every 6 months, or sooner if the solutions have degraded or concentrated.”</p> <p>Is updated to:</p> <p>“Prepare five-point initial calibration standard solutions containing a mixture of Aroclors 1016 and 1260 at the following suggested levels: 100; 200; 400; 800; and 1600 ng/mL and surrogates at 5.0, 10, 20, 40 and 80 ng/mL for tetrachloro-m-xylene and 10, 20, 40, 80 and 160 ng/mL for decachlorobiphenyl. <i>In addition, prepare a single-point initial calibration standard solution containing Aroclors 1221 at 400 ng/mL including surrogates, tetrachloro-m-xylene at 20 ng/mL and decachlorobiphenyl at 40 ng/mL. Also, prepare a single point calibration initial calibration standard of Aroclor 1232, 1242, 1248, 1254, 1262, and 1268 as instructed for Aroclor 1221. Refer to Section 7.2.3.4.3 for five-point calibration standards of the other Aroclors.</i> The solutions must be prepared every 6 months, or sooner if the solutions have degraded or concentrated.”</p>
<p><i>Aro-Item 2</i> Exhibit D - Aroclor: Section 7.2.3.4.2</p>	<p>The following Section:</p> <p>“Prepare a single-point calibration verification standard solution containing Aroclor 1260 and Aroclor 1016 at 400 ng/mL and surrogates at 20 ng/mL for tetrachloro-m-xylene and 40 ng/mL for decachlorobiphenyl. The solution must be prepared every 6 months, or sooner if the solution has degraded or concentrated.”</p> <p>Is updated to:</p> <p>“Prepare a single-point calibration verification standard solution containing Aroclor 1260 and Aroclor 1016 at 400 ng/mL and surrogates, <i>tetrachloro-m-xylene at 20 ng/mL and decachlorobiphenyl 40 ng/mL. Additional individual calibration verification standard solution(s) containing any other Aroclor may be prepared when necessary at 400 ng/mL, including surrogates, tetrachloro-m-xylene at 20 ng/mL and decachlorobiphenyl at 40 ng/mL.</i> The solution must be prepared every 6 months, or sooner if the solution has degraded or concentrated.”</p>



EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><i>Aro-Item 3</i> Exhibit D - Aroclor: Section 9.2.1</p>	<p>The following Section:</p> <p>“Summary of Initial Calibration</p> <p>Prior to sample analysis (including LCSs and MS/MSDs) and required blanks (method/sulfur cleanup/instrument), each GC/ECD system must be initially calibrated to determine instrument sensitivity and the linearity of Aroclor response. An initial five-point calibration is performed using Aroclors 1016 and 1260 to demonstrate the linearity of the detector response. The other seven Aroclors are calibrated at a single mid-point for pattern recognition. The standards for these seven Aroclors should be analyzed before the analysis of any samples, and may be analyzed before or after the analysis of the five levels of the Aroclor 1016/1260 standards.</p> <p>is updated to:</p> <p>Summary of Initial Calibration</p> <p>Prior to sample analysis (including LCSs and MS/MSDs) and required blanks (method/sulfur cleanup/instrument), each GC/ECD system must be initially calibrated to determine instrument sensitivity and the linearity of Aroclor response. An initial five-point calibration is performed using Aroclors 1016 and 1260 to demonstrate the linearity of the detector response. The other seven Aroclors can be calibrated at a single mid-point at a <b>minimum</b>, for pattern recognition. The standards for these seven Aroclors should be analyzed before the analysis of any samples, and may be analyzed before or after the analysis of the five levels of the Aroclor 1016/1260 standards.</p> <p><b>Note: All Aroclor target compounds may have five-point calibrations performed initially, prior to sample analyses. Alternately, as long as a valid five-point calibration of Aroclor 1016/1260 is present, five-point calibrations for any of the remaining Aroclor target compounds may be performed, prior to sample analyses.</b></p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><i>Aro-Item 4</i> Exhibit D - Aroclor: Section 9.2.2</p>	<p>The following Section:</p> <p>Each GC/ECD system must be initially calibrated upon award of the contract, whenever major instrument maintenance or modification is performed (e.g., column replacement or repair, cleaning or replacement of the ECD, etc.), or if the calibration verification technical acceptance criteria have not been met. Also, for any sample in which an Aroclor, other than Aroclor 1016 or Aroclor 1260 is detected, results for the specific Aroclor(s) may only be reported if the Aroclor(s) have been calibrated using multipoint standards (five-point). If time remains in the 12-hour period after a valid five-point initial calibration for a detected Aroclor(s) has been performed, then samples containing the Aroclor(s) may be analyzed. If the previously-analyzed five-point initial calibration containing the Aroclor(s) detected in the sample(s) is not in the same 12-hour sequence, then the sample(s) must be analyzed after a Continuing Calibration Verification (CCV) analysis containing the Aroclor(s) detected in the sample(s) that meets the criteria for CCVs in Section 9.3.</p> <p>is updated to:</p> <p>Each GC/ECD system must be initially calibrated upon award of the contract, whenever major instrument maintenance or modification is performed (e.g., column replacement or repair, cleaning or replacement of the ECD, etc.), or if the calibration verification technical acceptance criteria have not been met. Also, for any sample, in which an Aroclor (other than Aroclor 1016 or Aroclor 1260) is detected, <b>for which a valid five point calibration curve is not available, results for these specific Aroclors must be reported as an estimated concentration with the appropriate compound qualifier. Subsequently, the sample must be re-analyzed following a valid five point calibration of the specific Aroclor. All sample analysis, must be preceded by an opening CCV with an Aroclor 1016/1260 CS3 standard, at a minimum. Additional Aroclor opening CCV standards may be analyzed at the laboratory's discretion. The closing CCV must include Aroclor 1016/1260 CS3 and all detected Aroclors in the sample. When an Aroclor, other than Aroclor 1016/1260, is detected in a sample, the closing CCV CS3 standard of this detected Aroclor standard must meet opening CCV technical acceptance criteria in Section 9.3.5, if the sample was not preceded by the Aroclor included as a CS3 standard in the opening CCV."</b></p>
<p><i>Aro-Item 5</i> Exhibit D – Aroclor: Section 9.2.3.3</p>	<p>The following Section:</p> <p>"If Aroclors other than Aroclor 1016/1260 are detected in an analysis, a separate five point calibration must be prepared (Section 7.2.3.4.3) and run for that particular Aroclor."</p> <p>is updated to:</p> <p>"If Aroclors other than Aroclor 1016/1260 are detected in a <b>sample</b> analysis, <b>following a single-point calibration for that particular Aroclor</b>, a separate five-point calibration must be prepared (Section 7.2.3.4.3) and run for that particular Aroclor, <b>followed by a re-analysis of the sample.</b>"</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><i>Aro-Item 6</i> Exhibit D – Aroclor; Section 9.2.3.5</p>	<p>Analyze the initial calibration sequence as given below.</p> <p>Initial Calibration Sequence</p> <ol style="list-style-type: none"> <li>1. Aroclor 1221 CS3 (400 ng/mL)</li> <li>2. Aroclor 1232 CS3 (400 ng/mL)</li> <li>3. Aroclor 1242 CS3 (400 ng/mL)</li> <li>4. Aroclor 1248 CS3 (400 ng/mL)</li> <li>5. Aroclor 1254 CS3 (400 ng/mL)</li> <li>6. Aroclor 1262 CS3 (400 ng/mL)</li> <li>7. Aroclor 1268 CS3 (400 ng/mL)</li> <li>8. Aroclor 1016/1260 CS1 (100 ng/mL)</li> <li>9. Aroclor 1016/1260 CS2 (200 ng/mL)</li> <li>10. Aroclor 1016/1260 CS3 (400 ng/mL)</li> <li>11. Aroclor 1016/1260 CS4 (800 ng/mL)</li> <li>12. Aroclor 1016/1260 CS5 (1600 ng/mL)</li> <li>13. Instrument blank</li> </ol> <p><b>Note:</b> The single-point Aroclor standards may be analyzed after the analysis of the five levels of the Aroclor 1016/1260 standards. The steps pertaining to the instrument blank are used as part of the calibration verification as well.</p> <p>is updated to:</p> <p><b>“Initial Calibration may be performed by any of the following sequence Options given below:</b></p> <p>Initial Calibration Sequence – <b>Option 1</b></p> <ol style="list-style-type: none"> <li>1. Aroclor 1221 CS3 (400 ng/mL)</li> <li>2. Aroclor 1232 CS3 (400 ng/mL)</li> <li>3. Aroclor 1242 CS3 (400 ng/mL)</li> <li>4. Aroclor 1248 CS3 (400 ng/mL)</li> <li>5. Aroclor 1254 CS3 (400 ng/mL)</li> <li>6. Aroclor 1262 CS3 (400 ng/mL)</li> <li>7. Aroclor 1268 CS3 (400 ng/mL)</li> <li>8. Aroclor 1016/1260 CS1 (100 ng/mL)</li> <li>9. Aroclor 1016/1260 CS2 (200 ng/mL)</li> <li>10. Aroclor 1016/1260 CS3 (400 ng/mL)</li> <li>11. Aroclor 1016/1260 CS4 (800 ng/mL)</li> <li>12. Aroclor 1016/1260 CS5 (1600 ng/mL)</li> </ol> <p><b>Note:</b> The single-point Aroclor standards may be analyzed after the analysis of the five levels of the Aroclor 1016/1260 standards in Option 1 above.</p> <p style="text-align: center;"><b>OR</b></p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><i>Aro-Item 6</i> Exhibit D – Aroclor: Section 9.2.3.5 (Cont.)</p>	<p><u>Initial Calibration Sequence - Option 2</u>  5-points of Aroclor 1016/1260(100ng/mL to 1600ng/mL)  5-points of Aroclor 1221 (100ng/mL to 1600ng/mL)  5-points of Aroclor 1232(100ng/mL to 1600ng/mL)  5-points of Aroclor 1242(100ng/mL to 1600ng/mL)  5-points of Aroclor 1248(100ng/mL to 1600ng/mL)  5-points of Aroclor 1254(100ng/mL to 1600ng/mL)  5-points of Aroclor 1262(100ng/mL to 1600ng/mL)  5-points of Aroclor 1268(100ng/mL to 1600ng/mL)</p> <p style="text-align: center;">OR</p> <p><u>Initial Calibration Sequence - Option 3</u>  5-points of Aroclor 1016/1260(100ng/mL to 1600ng/mL)  5-points or single point Aroclor 1221 (100ng/mL - 1600ng/mL or 400ng/mL)  5-points or single point Aroclor 1232 (100ng/mL - 1600ng/mL or 400ng/mL)  5-points or single point Aroclor 1242 (100ng/mL - 1600ng/mL or 400ng/mL)  5-points or single point Aroclor 1248 (100ng/mL - 1600ng/mL or 400ng/mL)  5-points or single point Aroclor 1254 (100ng/mL - 1600ng/mL or 400ng/mL)  5-points or single point Aroclor 1262 (100ng/mL- 1600ng/mL or 400ng/mL)  5-points or single point Aroclor 1268 (100ng/mL - 1600ng/mL or 400ng/mL)</p> <p>Note: Option 2 and 3 Initial Calibration above may be performed in any Aroclor sequence as long as a valid five-point calibration of Aroclor 1016/1260 is present. Refer to Section 7.2.3.4 for initial calibration standard concentrations.</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><i>Aro-Item 7</i> Exhibit D – Aroclor: Section 9.2.4.2</p>	<p>The following Section:</p> <p>“For Aroclors 1016 and 1260, an RT is measured for a minimum of 3 peaks in each of the five calibration standards and the mean RT (<math>\overline{RT}</math>) is calculated for each of the peaks as the average of the five values obtained from the five calibration standards. For Aroclors 1221, 1232, 1242, 1248, 1254, 1262, and 1268 an RT is measured for each of the peaks for a single-point calibration standard. If a valid five-point calibration is present for a specific Aroclor then an RT is measured for each of the peaks in each of the five calibration standards and the RT is calculated as the average of the five values for each of the peaks obtained from the five calibration standards. An RT is measured for the surrogates in each of the five calibration standards and the RT is calculated as the average of the five values. Calculate the <math>\overline{RT}</math> using Equation 1:</p> <p>is updated to:</p> <p>“For Aroclors 1016 and 1260, an RT is measured for a minimum of 3 peaks in each of the five calibration standards and the mean RT (<math>\overline{RT}</math>) is calculated for each of the peaks as the average of the five values obtained from the five calibration standards. For Aroclors 1221, 1232, 1242, 1248, 1254, 1262, and 1268 an RT is measured for a <b>minimum of three</b> peaks for a single-point calibration standard. If a valid five-point calibration is present for a specific Aroclor then an RT is measured for a <b>minimum of three</b> peaks in each of the five calibration standards and the <math>\overline{RT}</math> is calculated as the average of the five values for each of the peaks obtained from the five calibration standards. An RT is measured for the surrogates in each of the five calibration standards of Aroclor 1016/1260, or from Aroclor 1016 if analyzed as a <b>separate mixture</b>. The surrogate <math>\overline{RT}</math> is calculated as the average of the five values. Calculate the <math>\overline{RT}</math> using Equation 1.”</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><i>Aro-Item 8</i> Exhibit D – Aroclor: Section 9.2.4.4</p>	<p>The following Section:</p> <p>“The linearity of the instrument is determined by calculating a Percent Relative Standard Deviation (%RSD) of the Calibration Factors (CFs). Either peak area or peak height may be used to calculate CFs used in the %RSD equation.</p> <p>Five sets of CFs will be generated for the Aroclor 1016/1260 mixture, each set consisting of the CFs for each of the five peaks chosen for this mixture. The single standard for each of the other Aroclors will generate at least three CFs, one for each selected peak, unless a valid five-point calibration is present for a specific Aroclor, in which case five sets of CFs will be generated for the specific Aroclor.</p> <p>Calculate CFs, the Mean CF (CF), and the %RSD of the CFs for each peak in a selected set of a minimum of 3 major peaks for each Aroclor using Equations 2, 3, and 4.”</p> <p>Is updated to:</p> <p>“The linearity of the instrument is determined by calculating a Percent Relative Standard Deviation (%RSD) of the Calibration Factors (CFs). Either peak area or peak height may be used to calculate CFs used in the %RSD equation.</p> <p>Five sets of CFs will be generated for the Aroclor 1016/1260 mixture, each set consisting of the CFs for each of the peaks (<b>minimum of three</b>) chosen for this mixture. The single standard for each of the other Aroclors will generate at least three CFs, one for each selected peak, unless a valid five-point calibration is present for a specific Aroclor, in which case five sets of CFs will be generated for the specific Aroclor. <b>Calibration Factors (CF) for the surrogates must be generated for each of the five calibration standards of Aroclor 1016/1260, or from Aroclor 1016 if analyzed as a separate mixture.</b></p> <p><b>The <math>\overline{CF}</math> of each surrogate compound is calculated as the average of the five values.</b></p> <p>Calculate CFs, the Mean CF (<math>\overline{CF}</math>), and the %RSD of the CFs for each peak in a selected set of a minimum of 3 major peaks for each Aroclor using Equations 2, 3, and 4.”</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><i>Aro-Item 9</i> Exhibit D – Aroclor: Section 9.3.1</p>	<p>The following Section: “Summary of Continuing Calibration Verification (CCV)</p> <p>The analyses of instrument blanks and the required Aroclor CS3 Standard Mixtures (see Section 9.3.2) constitute the calibration verification. Sample (including LCS and MS/MSD) and required blank (method/sulfur cleanup) data are not acceptable unless bracketed by acceptable analyses of instrument blanks and the Aroclor CS3 Standard Mixtures. In cases where a valid five-point initial calibration for the detected Aroclors is required, that initial calibration may be substituted for the opening CCV.”</p> <p>Is updated to: “Summary of Continuing Calibration Verification (CCV)</p> <p><b>The analyses of instrument blanks and the required Aroclor CS3 Standard Mixtures (see Section 9.3.2) constitute the calibration verification. Sample (including LCS and MS/MSD) and required blank (method/sulfur cleanup) data are not acceptable unless bracketed by acceptable analyses of instrument blanks and the Aroclor CS3 Standard Mixtures.”</b></p> <p>Note the last sentence in the section is deleted: <b>“In cases where a valid five-point initial calibration for the detected Aroclors is required, that initial calibration may be substituted for the opening CCV.”</b></p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><i>Aro-Item 10</i> Exhibit D – Aroclor: Section 9.3.2.1</p>	<p>The following section:</p> <p>An instrument blank and Aroclor 1016/1260 CS3 Standard Mixture must bracket one end of a 12-hour period (opening CCV) during which sample and required blank data are collected, and a second instrument blank and the Aroclor 1016/1260 CS3 Standard Mixture must bracket the other end of the 12-hour period (closing CCV). If during any 12-hour period, an Aroclor other than 1016 or 1260 is detected and the 12-hour time period for the five-point initial calibration of the detected Aroclor(s) has elapsed, then an instrument blank and a CS3 standard of the detected Aroclor(s) must bracket both ends of the 12-hour period. If the opening CCV does not meet all technical acceptance criteria, then a new valid five-point initial calibration for the detected Aroclors must be performed before samples containing the detected Aroclors may be analyzed.</p> <p>is updated to:</p> <p>“An instrument blank and Aroclor 1016/1260 CS3 Standard Mixture must bracket one end of a 12-hour period (opening CCV) during which sample and required blank data are collected, <b>a second instrument blank, Aroclor 1016/1260 CS3 and CS3 Standard Mixture (s) of any other detected Aroclor (s) must bracket the other end of a 12-hour period (closing CCV).</b> Each opening CCV must include an instrument blank and Aroclor 1016/1260 CS3 standard, additional Aroclor CS3 standards may be performed at the laboratory’s discretion. If a valid five-point calibration is available for Aroclor (s) other than 1016/1260, an opening CCV with an instrument blank and Aroclor 1016/1260 CS3 is sufficient, however, the closing CCV must <i>include</i> all Aroclors detected and meet opening CCV technical acceptance criteria in Section 9.3.5.3.</p>



EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><i>Aro-Item 11</i> Exhibit D – Aroclor: Section 9.3.2.2</p>	<p>For the 12-hour period immediately following the initial calibration sequence, the instrument blank is the last step in the initial calibration sequence and brackets the front end of that 12-hour period. The injection of the instrument blank starts the beginning of the 12-hour period (Section 10.3.2.1.1), followed by the injection of the Aroclor 1016/1260 CS3 Standard. Samples (including LCSs and MS/MSDs) and required blanks (method/sulfur cleanup) may be injected for 12 hours from the injection of the instrument blank. The first injections immediately after that 12-hour period must be an instrument blank and the Aroclor 1016/1260 CS3 Standard Mixture. The instrument blank must be analyzed first, before the standard.</p> <p>Is updated to:</p> <p>“The injection of an instrument blank starts the beginning of the 12-hour period (Section 10.3.2.1.1), followed by the injection of Aroclor 1016/1260 CS3 Standard <b>and any additional CS3 Standard Mixture(s) as determined by the laboratory.</b> Samples (including LCSs and MS/MSDs) and required blanks (method/sulfur cleanup) may be injected for 12 hours from the injection of the instrument blank. The first injections immediately after <b>the previous</b> 12-hour period must be an instrument blank, Aroclor 1016/1260 CS3 Standard <b>and CS3 Standard Mixture(s) of any other detected Aroclor.</b> A closing CCV must bracket the end of a 12-hour sequence.</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b><i>Aro-Item 12</i></b> Exhibit D – Aroclor: Section 9.3.2.3</p>	<p>The following Section:</p> <p>“The analyses of the instrument blank and CS3 Standard Mixture (closing CCV) immediately following one 12-hour period may be used to begin the subsequent 12-hour period as an opening CCV, provided that they meet the technical acceptance criteria in Section 9.3.5. In that instance, the subsequent 12-hour period must be bracketed by the acceptable analyses of an instrument blank and a CS3 Standard Mixture (closing CCV), in that order. Those two analyses may in turn be used to bracket the front end of yet another 12-hour period (opening CCV). This progression may continue every 12 hours until such time as any of the instrument blanks or the CS3 Standard Mixture fails to meet the technical acceptance criteria in Section 9.3.4, or an Aroclor has been detected in a sample for which the corresponding CS3 standard was not performed for the opening CCV. The 12-hour time period begins with the injection of the instrument blank.”</p> <p>is updated to:</p> <p>“The analyses of the instrument blank and CS3 Standard Mixture(s) (closing CCV) immediately following one 12-hour period may be used to begin the subsequent 12-hour period as an opening CCV, provided that they meet the technical acceptance criteria in Section 9.3.5. In that instance, the subsequent 12-hour period must be bracketed by the acceptable analyses of an instrument blank and a CS3 Standard Mixture(s) (closing CCV), in that order. Those two analyses may in turn be used to bracket the front end of yet another 12-hour period (opening CCV). This progression may continue every 12 hours until such time as any of the instrument blanks or the <b>required</b> CS3 Standard Mixture (s) fails to meet the technical acceptance criteria in <b>Section 9.3.5</b>.</p>
<p><b><i>Aro-Item 13</i></b> Exhibit D – Aroclor: Section 9.3.2.4</p>	<p>The following section is deleted:</p> <p><b>“If more than 12 hours have elapsed since the injection of the instrument blank that bracketed a previous 12-hour period, an acceptable instrument blank and an Aroclor 1016/1260 CS3 standard must be analyzed in order to start a new sequence. This requirement applies even if no analyses were performed since that standard was injected.”</b></p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><i>Aro-Item 14</i> Exhibit D – Aroclor: Section 9.3.2.5</p>	<p>The following Section:          “The requirements for running the instrument blanks and CS3 Aroclor 1016/1260 Standard Mixture are waived when no samples (including LCSs and MS/MSDs), dilutions, reanalyses, or required blanks (method/sulfur cleanup) are analyzed during that 12-hour period. To resume analysis, using the existing initial calibration, the Contractor must first analyze an instrument blank and CS3 Aroclor 1016/1260 Standard that meet the technical acceptance criteria.”</p> <p>Is updated to:          “The requirements for running the instrument blanks and CS3 Aroclor 1016/1260 Standard Mixture are waived when no samples (including LCSs and MS/MSDs), dilutions, reanalyses, or required blanks (method/sulfur cleanup) are analyzed during that 12-hour period. To resume analysis, using the existing initial calibration, the Contractor must first analyze an <b>opening CCV that consist of</b> an instrument blank, Aroclor 1016/1260 CS3 Standard, <b>and any additional CS3 Aroclor Standard (s)</b> that meet the technical acceptance criteria. <b>Note: Additional opening CCV CS3 Aroclor Standard (s) determined to be necessary are at the laboratory’s discretion.</b>”</p>
<p><i>Aro-Item 15</i> Exhibit D – Aroclor: Section 9.3.2.5</p>	<p>The current “Section 9.3.2.5” is updated to “<b>Section 9.3.2.4</b>”.</p>
<p><i>Aro-Item 16</i> Exhibit D – Aroclor: Section 9.3.2.6</p>	<p>The following Section:          “If the entire 12-hour period is not required for the analyses of all samples and blanks to be reported and all data collection is to be stopped, the sequence must be ended with the instrument blank/CS3 Aroclor Standard Mixture (s) (1016/1260 and all detected Aroclors) combination.”</p> <p>is updated to:          “If the entire 12-hour period is not required for the analyses of all samples and blanks to be reported and all data collection is to be stopped, the sequence must <b>end with an appropriate closing CCV combination, that is, an instrument blank/CS3 Aroclor 1016/1260 and all detected Aroclor CS3 Standard Mixture(s).</b>”</p>
<p><i>Aro-Item 17</i> Exhibit D – Aroclor: Section 9.3.2.6</p>	<p>The current “Section 9.3.2.6” is updated to “<b>Section 9.3.2.5</b>”.</p>
<p><i>Aro-Item 18</i> Exhibit D – Aroclor: Section 9.3.2.7</p>	<p>The following Section:          “No more than 14 hours may elapse from the injection beginning the opening CCV (instrument blank) and the injection ending the closing CCV (Aroclor Standard).”</p> <p>Is updated to:          “No more than 14 hours may elapse from the injection beginning the opening CCV (instrument blank) and the injection ending the closing CCV (Aroclor Standard). <b>If more than 12 hours elapse between the injections of the two instrument blanks (opening and closing CCV) that bracket a 12-hour period in which samples or required blanks are analyzed, then the time between the injection of the instrument blank (closing CCV) and the preceding sample may not exceed the length of one chromatographic run.</b>”</p>

<p><i>Aro-Item 19</i> Exhibit D – Aroclor: Section 9.3.2.7</p>	<p>The current “Section 9.3.2.7” is updated to “Section 9.3.2.6”.</p>
<p><i>Aro-Item 20</i> Exhibit D – Aroclor: Section 9.3.4</p>	<p>The following Section: “Calculations for Calibration Verification</p> <p>For each analysis of the CS3 Individual Standard Mixture(s) used to demonstrate calibration verification, calculate the Percent Difference between the CF of each Aroclor peak (including the surrogates) in the standard mixture and the CF from the initial calibration, using Equation 5.”</p> <p>is updated to: “Calculations for Calibration Verification</p> <p>For each analysis of the CS3 Individual Standard Mixture(s) used to demonstrate calibration verification, calculate the Percent Difference between the CF of each Aroclor peak <b>in the standard mixture and the CF from the initial calibration, using Equation 5. Calculate the Percent Difference between CF of surrogates in each standard mixture and the CF from the initial calibration of Aroclor 1016/1260 or 1016 if analyzed as a separate mixture, using Equation 5.”</b></p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 21</b> Exhibit D – Aroclor: Section 9.3.5.3</p>	<p>The following Section:</p> <p>“For the opening CCV, Percent Difference for each Aroclor peak and surrogates calculated from the CCV standard must not exceed <math>\pm 15\%</math>. For the closing CCV, Percent Difference for each Aroclor peak and surrogates calculated from the CCV must not exceed <math>\pm 50\%</math>. If the Percent Difference for the closing CCV is <math>\pm 15\%</math> or less, then it can be used for the opening CCV of the next 12-hour period.”</p> <p>is updated to:</p> <p>“For the opening CCV, Percent Difference for each Aroclor peak and surrogates calculated from the CCV standard must not exceed <math>\pm 15\%</math>. For the closing CCV, Percent Difference for each Aroclor peak and surrogates calculated from the CCV must not exceed <math>\pm 50\%</math>. If the Percent Difference for the closing CCV is <math>\pm 15\%</math> or less, then it can be used for the opening CCV of the next 12-hour period.</p> <p><b>Note: When a required closing CCV of an Aroclor other than Aroclor 1016/1260 is preceded by an opening CCV of Aroclor 1016/1260 CS3 only, the percent difference of each Aroclor peak and surrogate compound must not exceed <math>\pm 15\%</math>.</b>”</p>
<p><b>Aro-Item 22</b> Exhibit D – Aroclor: Section 9.3.6.7</p>	<p>The following Section:</p> <p>“If a successful instrument blank and Aroclor 1016/1260 standard cannot be run after an interruption in analysis (Section 9.3.2.6), an acceptable initial calibration must be run before sample data may be collected. All acceptable sample (including LCS and MS/MSDs) and required blank (method/sulfur cleanup) analyses must be preceded and followed by acceptable standards and instrument blanks, as described in Section 9.3.2.”</p> <p>is updated to:</p> <p>“If a successful instrument blank and Aroclor 1016/1260 standard cannot be run after an interruption in analysis (Section 9.3.2.6), an acceptable initial calibration must be run before sample data may be collected. All acceptable sample (including LCS and MS/MSDs) and required blank (method/sulfur cleanup) analyses must be preceded and followed by acceptable instrument blanks and standards (<b>opening and closing CCV</b>) as described in Section 9.3.2.”</p>
<p><b>Aro-Item 23</b> Exhibit D - Aroclor: Section 10.2.2.3.1</p>	<p>The following Section:</p> <p>“Using a syringe or a volumetric pipet, transfer all of the hexane extract to a 10mL vial and, in a fume hood, carefully add 5mL of the 1:1 (v/v) sulfuric acid/water solution.”</p> <p>is updated to:</p> <p>“Using a syringe or a volumetric pipet, transfer <b>an aliquot (1 or 2 mL)</b> of the hexane extract to a 10mL vial and, in a fume hood, carefully add 5mL of the 1:1 (v/v) sulfuric acid/water solution.”</p>
<p><b>Aro-Item 24</b> Exhibit D – Aroclor: Section 10.2.2.3.1 and 10.2.2.3.2</p>	<p>The following Sections will be switched:</p> <p>The language for the updated sentence of Section 10.2.2.3.1 will become Section 10.2.2.3.2 and vice versa.</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)		
<b>Aro-Item 25</b> Exhibit D – Aroclor: Section 10.3.2.1	The following Section: “Analytical Sequence		
	All acceptable samples must be analyzed within a valid analysis sequence as given below:		
	Time	Injection #	Material Injected
		1-12	First 12 steps of the initial calibration
	0 hr.	13	Instrument blank
		14	Aroclor 1016/1260
			Standard
			Sample
	12 hr.		Last sample
		1 <sup>st</sup> injection past 12 hr.	Instrument blank
			Aroclor 1016/1260
		2 <sup>nd</sup> injection past 12 hr.	standard
			Subsequent samples
	Another 12 hrs.		Last sample
		1 <sup>st</sup> injection past 12 hr.	Instrument blank
			Aroclor 1016/1260
		2 <sup>nd</sup> injection past 12 hr.	standard
		3 <sup>rd</sup> injection past 12 hr.	Sample
	is updated to:		
	“Analytical Sequence		
	All acceptable samples must be analyzed within a valid analysis sequence as given below:		
	Time	Injection #	Material Injected
		1-12 (or 5-points of all Aroclors)	First 12 steps of the initial calibration (or 5-points of all Aroclors)
	0 hr.	13	Instrument blank
		14	Aroclor 1016/1260 Standard
		15	Additional Aroclor CS3
			Standard (optional)
		16	Subsequent Samples
	12 hr.		Last sample
		1 <sup>st</sup> injection past 12 hr.	Instrument blank
		2 <sup>nd</sup> injection past 12 hr.	Aroclor 1016/1260 Standard
			Detected Aroclor CS3
		3 <sup>rd</sup> injection past 12 hr.	Standard (as required)
			Detected Aroclor CS3
	14 hr.	4 <sup>th</sup> injection past 12 hr.	Standard (as required)
			Subsequent Samples
	Another 12 hrs.		Last sample
		1 <sup>st</sup> injection past 12 hr.	Instrument blank
		2 <sup>nd</sup> injection past 12 hr.	Aroclor 1016/1260 standard
		3 <sup>rd</sup> injection past 12 hr.	Sample

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><i>Aro-Item 26</i> Exhibit D – Aroclor: Section 10.3.2.1.1</p>	<p>The following Section:</p> <p>“The first 12 hours are counted from injection #13, not from injection #1. Samples may be injected until 12:00 hours have elapsed. All subsequent 12-hour periods are timed from the injection of the instrument blank that brackets the front end of the samples. If more than 12 hours elapse between the injections of two instrument blanks that bracket a 12-hour period in which samples or required blanks are analyzed, then the time between the injection of the instrument blank and the preceding sample may not exceed the length of one chromatographic run. While the 12-hour period may not be exceeded, the laboratory may run instrument blanks and standards more frequently, for instance, to accommodate staff working on 8-hour shifts. No more than 14 hours may elapse from the injection beginning the opening CCV (instrument blank) and the injection ending the closing CCV (Aroclor Standard).”</p> <p>is updated to:</p> <p><b>“Injections #1 through #12 in Section 10.3.2.1 may be expanded to include all injections of initial calibration standards as specified in Option 2 and 3 in Section 9.2.3.5. The first 12 hours are counted from injection #13, not from injection #1, in the initial calibration sequence Option 1 detailed in Section 10.3.2.1. Alternately, the first 12 hours will be counted from the injection of the instrument blank of an opening CCV when performed immediately after completion of the initial calibration Options 2 and 3. Samples may be injected until 12:00 hours have elapsed. All subsequent 12-hour periods are timed from the injection of the instrument blank that brackets the front end of the samples. If more than 12 hours elapse between the injections of two instrument blanks that bracket a 12-hour period in which samples or required blanks are analyzed, then the time between the injection of the instrument blank and the preceding sample may not exceed the length of one chromatographic run. While the 12-hour period may not be exceeded, the laboratory may run instrument blanks and standards more frequently, for instance, to accommodate staff working on 8-hour shifts. No more than 14 hours may elapse from the injection beginning the opening CCV (instrument blank) and the injection ending the closing CCV (Aroclor Standard).”</b></p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 27</b>  Exhibit D – Aroclor: Section 10.3.3.2</p>	<p>The following:</p> <p><i>“If the <b>response</b> of the largest peak for any Aroclor is greater than the <b>response</b> of the same peak in the high-point standard in the initial calibration for both columns, then the sample must be diluted to have the <b>response</b> of the largest peak of the lower of the two column analyses be between the low and high calibration standards.”</i></p> <p>Is updated to:</p> <p><i>“If the <b>concentration</b> of the largest peak for any Aroclor is greater than the <b>concentration</b> of the same peak in the high-point standard in the initial calibration for both columns (the largest peak on the second column may be a different peak), then the sample must be diluted to have the <b>concentration</b> of the largest peak of the lower of the two column analyses be between the low and high calibration standards.”</i></p>
<p><b>Aro-Item 28</b>  Exhibit D – Aroclor: Section 10.3.3.8</p>	<p>The following:</p> <p><i>“Use the results of the original analysis to determine the approximate DF required to get the largest analyte peak (for the lower of the two column <b>responses</b>) within the initial calibration range.”</i></p> <p>Is updated to:</p> <p><i>“Use the results of the original analysis to determine the approximate DF required to get the largest analyte peak (for the lower of the two column <b>concentrations</b>) within the initial calibration range.”</i></p>
<p><b>Aro-Item 29</b>  Exhibit D – Aroclor: Section 11.1.1.4</p>	<p>The following Section:</p> <p><i>“When an Aroclor other than 1016 or 1260 is detected in a sample, a valid five-point calibration curve specific to that Aroclor must be run, followed by reanalysis of the sample or appropriately diluted sample with the detected Aroclor present. The Mean Calibration Factor (CF) will be used to quantitate the analyte in the sample.”</i></p> <p>is updated to:</p> <p><i>“When an Aroclor other than 1016 or 1260 is detected in a sample, <b>using a single point calibration</b>, a valid five point calibration of the specific Aroclor must be <b>performed</b>, followed by reanalysis of the sample or appropriately diluted sample (<b>if the sample concentration of Aroclor exceeded calibration</b>) with the Aroclor detected initially. <b>If a valid five-point calibration curve is available for an Aroclor other than 1016 or 1260, the Mean Calibration Factor ( <math>\overline{CF}</math> ) will be used for quantitation of the Aroclor in the sample, however, quantitation of the surrogate compounds using <i>surrogate data from the initial five-point Aroclor 1016/1260 or from Aroclor 1016 if analyzed as a separate mixture.</i></b></i></p> <p><b>Note:</b> An estimated concentration (reported with an “S” flag) of the initial detection for an Aroclor other than 1016 or 1260, using a single point calibration standard will be quantitated using the Calibration Factor (CF), of at least 3 major peaks, from the specific single point calibration standard. The surrogates will be quantitated using the initial five-point Aroclor 1016/1260 or from Aroclor 1016 if analyzed as a separate mixture.</p>



EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 30</b>  Exhibit D – Aroclor: Section 11.2.1.1.1, Equation 7  The equation is further expanded to allow for greater flexibility in the preparation and cleanup steps as follows:</p> $\text{Concentration } \mu\text{g/L} = \left( \frac{A_x}{\overline{CF}} \right) \left( \frac{DF}{V_i} \right) \left( \frac{V_t}{V_o} \right) \left( \frac{CV_{out}}{CV_{in} \times E} \right)_1 \left( \frac{CV_{out}}{CV_{in} \times E} \right)_2 \cdots \left( \frac{CV_{out}}{CV_{in} \times E} \right)_n$ <p>where,</p> <p style="margin-left: 150px;"> <math>A_x</math> = Peak area or peak height of the compound to be measured.  <math>\overline{CF}</math> = Mean Calibration Factor determined from the initial calibration for the compound to be measured, in area/ng.  <math>DF</math> = Dilution Factor.  <math>V_i</math> = Volume of extract injected in <math>\mu\text{L}</math>.  <math>V_t</math> = Volume of extract produced by the preparation process (extraction and concentration), and before cleanup, in <math>\mu\text{L}</math>.  <math>V_o</math> = Volume of the original water sample extracted in mL. Note: for instrument blanks and sulfur blanks assume a volume of 1000mL.  <math>CV_{out}</math> = Volume of extract produced by a cleanup process (cleanup and concentration), in <math>\mu\text{L}</math>.  <math>CV_{in}</math> = Volume of extract subjected to a cleanup process, in <math>\mu\text{L}</math>.  <math>E</math> = The efficiency of the cleanup process expressed as a fraction of material that passes through or is not mechanically lost during the cleanup step (e.g. 50% efficiency must be expressed as 0.50) </p>	
<p><b>Aro-Item 31</b>  Exhibit D – Aroclor: Section 11.2.1.2.1, Equation 9  The equation is further expanded to allow for greater flexibility in the preparation and cleanup steps as follows:</p> $\text{Concentration } \mu\text{g/kg} = \left( \frac{A_x}{\overline{CF}} \right) \left( \frac{DF}{V_i} \right) \left( \frac{V_t}{W_t \times D} \right) \left( \frac{CV_{out}}{CV_{in} \times E} \right)_1 \left( \frac{CV_{out}}{CV_{in} \times E} \right)_2 \cdots \left( \frac{CV_{out}}{CV_{in} \times E} \right)_n$ <p>where,</p> <p><math>A_x</math>, <math>\overline{CF}</math>, <math>DF</math>, <math>V_i</math>, <math>V_t</math>, <math>CV_{out}</math>, <math>CV_{in}</math>, and <math>E</math> are the same as Equation 7 above.</p> <p style="margin-left: 150px;"> <math>W_t</math> = Weight of the original soil sample extracted in g.  <math>D</math> = <math>\frac{100 - \% \text{Moisture}}{100}</math> </p>	

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><i>Aro-Item 32</i> Exhibit D – Aroclor: Section 11.2.2</p>	<p>The following Section: “Target Compounds</p> <p>The quantitation of Aroclors must be accomplished by comparing the heights or the areas of each of a minimum of 3 major peaks of the Aroclor in the sample with the CF for the same peaks established during the specific five-point calibration. The concentration of multi-component analytes is calculated by using Equations 7 and 9, where <math>A_x</math> is the area for each of the major peaks of the Aroclor. The concentration of each peak is determined and then a mean concentration for a minimum of 3 major peaks is determined on each column.”</p> <p>is updated to: “Target Compounds</p> <p><b>Except for an estimated value reported for an Aroclor other than 1016 or 1260,</b> The quantitation of Aroclors must be accomplished by comparing the heights or the areas of each of a minimum of 3 major peaks of the Aroclor in the sample with the CF for the same peaks established during the specific five-point calibration. The concentration of multi-component analytes is calculated by using Equations 7 and 9, where <math>A_x</math> is the area for each of the major peaks of the Aroclor. The concentration of each peak is determined and then a mean concentration for a minimum of 3 major peaks is determined on each column.”</p>
<p><i>Aro-Item 33</i> Exhibit D – Aroclor: Section 11.2.2.1</p>	<p>The following Section: “Note that the CFs used for the quantitation of Aroclors are the CFs from the concentration of the specific five-point calibration.”</p> <p>is updated to: “To quantitate and report the estimated concentration of an Aroclor other than 1016 or 1260, use the Calibration Factor (CF) for a minimum of 3 major peaks, from the single point Aroclor calibration standard used for the Aroclor pattern recognition. It will be necessary to substitute the single Calibration Factor (CF) for the Mean CF (<math>\overline{CF}</math>) in Equations 7, 8, 9 and 10.</p> <p><b>Note:</b> The CFs used for the quantitation of <b>target</b> Aroclors are the CFs from the concentration of the specific five-point calibration.”</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><i>Aro-Item 34</i>  Exhibit D – Aroclor: Section 11.2.3.1, Equation 12  The equation is further expanded to allow for greater flexibility in the preparation and cleanup steps as follows:</p>	<p>EQ. 12      Adjusted CRQL Calculation for Water Samples</p> $\text{Adjusted CRQL} = (\text{Contract CRQL}) \left( \frac{V_x}{V_o} \right) \left( \frac{V_t}{V_y} \right) (DF) \left( \frac{CV_{out}}{CV_{in} \times E} \right)_1 \left( \frac{CV_{out}}{CV_{in} \times E} \right)_2 \dots \left( \frac{CV_{out}}{CV_{in} \times E} \right)_n$ <p>where,</p> <p>Contract CRQL      =    The CRQL value reported in Exhibit C – Aroclors (µg/L).</p> <p>V<sub>x</sub>                    =    Contract sample volume (1000 mL).</p> <p>V<sub>o</sub>                    =    Volume of water extracted in mL. Note: for instrument and sulfur blanks assume a volume of 1000mL.</p> <p>V<sub>t</sub>                    =    Volume of water <i>concentrated extract</i> in µL.</p> <p>V<sub>y</sub>                    =    Contract concentrated extract volume (10,000 µL).</p> <p>DF                    =    Dilution Factor.</p> <p>CV<sub>out</sub>                =    Volume of extract produced by a cleanup process (cleanup and concentration), in µL.</p> <p>CV<sub>in</sub>                =    Volume of extract subjected to a cleanup process, in µL.</p> <p>E                     =    The efficiency of the cleanup process expressed as a fraction of material that passes through or is not mechanically lost during the cleanup step (e.g. 50% efficiency must be expressed as 0.50).</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 35</b>  Exhibit D – Aroclor: Section 11.2.3.2 Equation 13  The equation is further expanded to allow for greater flexibility in the preparation and cleanup steps as follows:</p> <p><b>EQ. 13            Adjusted CRQL Calculation for Soil/Sediment Samples</b></p> $\text{Adjusted CRQL} = (\text{Contract CRQL}) \left( \frac{W_x}{W_s \times D} \right) \left( \frac{V_t}{V_y} \right) (DF) \left( \frac{CV_{out}}{CV_{in} \times E} \right)_1 \left( \frac{CV_{out}}{CV_{in} \times E} \right)_2 \dots \left( \frac{CV_{out}}{CV_{in} \times E} \right)_n$ <p>where,</p> <p><b>Contract CRQL</b>    =    The CRQL value reported in Exhibit C – Aroclors (µg/Kg).  <b>W<sub>x</sub></b>                =    Contract sample weight (30 g).  <b>W<sub>s</sub></b>                =    Weight of sample extracted in grams (g).  <b>D</b>                    =    <math>\frac{100 - \% \text{Moisture}}{100}</math>  <b>V<sub>t</sub></b>                =    Volume of the concentrated extract in µL.  <b>V<sub>y</sub></b>                =    Contract concentrated extract volume (10,000 µL).  <b>DF</b>                =    Dilution Factor.  <b>CV<sub>out</sub></b>            =    Volume of extract produced by a cleanup process (cleanup and concentration), in µL.  <b>CV<sub>in</sub></b>            =    Volume of extract subjected to a cleanup process, in µL.  <b>E</b>                    =    The efficiency of the cleanup process expressed as a fraction of material that passes through or is not mechanically lost during the cleanup step (e.g. 50% efficiency must be expressed as 0.50).</p>	
<p><b>Aro-Item 36</b>  Exhibit D – Aroclor: Section 11.2.4</p>	<p>The following Section :</p> <p>“The concentrations for surrogate compounds can be calculated by using Equation 7 (for waters) and Equation 9 (for soils) and the CF from the most recent initial calibration.”</p> <p>is updated to:</p> <p>“The concentrations for surrogate compounds can be calculated by using Equation 7 (for waters) and Equation 9 (for soils) and the CF from a <b>valid initial five-point calibration of Aroclor 1016/1260 or from Aroclor 1016 if analyzed as a separate mixture.</b>”</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><i>Aro-Item 37</i> Exhibit D – Aroclor: Section 11.3.5</p>	<p>The following Section: “The RT for each of the surrogates must be within the RT window (Section 9.2.4.3) for both GC columns.”</p> <p>is updated to: “<b>Surrogate compounds Retention Time (RT) must be compared to the window established during a valid initial five-point calibration of Aroclor 1016/1260 or from Aroclor 1016 if analyzed as a separate mixture.</b> The RT for each of the surrogates must be within the RT window (Section 9.2.4.3) for both GC columns.”</p>
<p><i>Aro-Item 38</i> Exhibit D – Aroclor: Section 12.3.4.2</p>	<p>The following Section: “Calculate individual compound recoveries of the LCS using Equation 14”</p> <p>is updated to: “Calculate individual compound recoveries of the LCS using <b>Equation 15</b>”.</p>

EXHIBIT D – AROCLORS	
EXHIBIT/SECTION(S)	MODIFICATION (S)
<b>Aro-Item 1</b> Exhibit D - Aroclor: Section 7.2.3.4.1	<p>The following Section:</p> <p>“Prepare five-point initial calibration standard solutions containing a mixture of Aroclors 1016 and 1260 at the following suggested levels: 100; 200; 400; 800; and 1600 ng/mL and surrogates at 5.0, 10, 20, 40 and 80 ng/mL for tetrachloro-m-xylene and 10, 20, 40, 80 and 160 ng/mL for decachlorobiphenyl. Also, prepare a single-point initial calibration standard solution containing Aroclors 1221, 1232, 1242, 1248, 1254, 1262, and 1268 at 400 ng/mL and surrogates at 20 ng/mL for tetrachloro-m-xylene and 40 ng/mL for decachlorobiphenyl. The solutions must be prepared every 6 months, or sooner if the solutions have degraded or concentrated.”</p> <p>Is updated to:</p> <p>“Prepare five-point initial calibration standard solutions containing a mixture of Aroclors 1016 and 1260 at the following suggested levels: 100; 200; 400; 800; and 1600 ng/mL and surrogates at 5.0, 10, 20, 40 and 80 ng/mL for tetrachloro-m-xylene and 10, 20, 40, 80 and 160 ng/mL for decachlorobiphenyl. <b><i>In addition, prepare a single-point initial calibration standard solution containing Aroclors 1221 at 400 ng/mL including surrogates, tetrachloro-m-xylene at 20 ng/mL and decachlorobiphenyl at 40 ng/mL. Also, prepare a single point calibration initial calibration standard of Aroclor 1232, 1242, 1248, 1254, 1262, and 1268 as instructed for Aroclor 1221. Refer to Section 7.2.3.4.3 for five-point calibration standards of the other Aroclors.</i></b> The solutions must be prepared every 6 months, or sooner if the solutions have degraded or concentrated.”</p>
<b>Aro-Item 2</b> Exhibit D - Aroclor: Section 7.2.3.4.2	<p>The following Section:</p> <p>“Prepare a single-point calibration verification standard solution containing Aroclor 1260 and Aroclor 1016 at 400 ng/mL and surrogates at 20 ng/mL for tetrachloro-m-xylene and 40 ng/mL for decachlorobiphenyl. The solution must be prepared every 6 months, or sooner if the solution has degraded or concentrated.”</p> <p>Is updated to:</p> <p>“Prepare a single-point calibration verification standard solution containing Aroclor 1260 and Aroclor 1016 at 400 ng/mL and surrogates, <b><i>tetrachloro-m-xylene at 20 ng/mL and decachlorobiphenyl 40 ng/mL. Additional individual calibration verification standard solution(s) containing any other Aroclor may be prepared when necessary at 400 ng/mL, including surrogates, tetrachloro-m-xylene at 20 ng/mL and decachlorobiphenyl at 40 ng/mL.</i></b> The solution must be prepared every 6 months, or sooner if the solution has degraded or concentrated.”</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 3</b> Exhibit D - Aroclor: Section 9.2.1</p>	<p>The following Section:</p> <p>“Summary of Initial Calibration</p> <p>Prior to sample analysis (including LCSs and MS/MSDs) and required blanks (method/sulfur cleanup/instrument), each GC/ECD system must be initially calibrated to determine instrument sensitivity and the linearity of Aroclor response. An initial five-point calibration is performed using Aroclors 1016 and 1260 to demonstrate the linearity of the detector response. The other seven Aroclors are calibrated at a single mid-point for pattern recognition. The standards for these seven Aroclors should be analyzed before the analysis of any samples, and may be analyzed before or after the analysis of the five levels of the Aroclor 1016/1260 standards.</p> <p>is updated to:</p> <p>Summary of Initial Calibration</p> <p>Prior to sample analysis (including LCSs and MS/MSDs) and required blanks (method/sulfur cleanup/instrument), each GC/ECD system must be initially calibrated to determine instrument sensitivity and the linearity of Aroclor response. An initial five-point calibration is performed using Aroclors 1016 and 1260 to demonstrate the linearity of the detector response. The other seven Aroclors can be calibrated at a single mid-point <b>at a minimum</b>, for pattern recognition. The standards for these seven Aroclors should be analyzed before the analysis of any samples, and may be analyzed before or after the analysis of the five levels of the Aroclor 1016/1260 standards.</p> <p><b>Note: All Aroclor target compounds may have five-point calibrations performed initially, prior to sample analyses. Alternately, as long as a valid five-point calibration of Aroclor 1016/1260 is present, five-point calibrations for any of the remaining Aroclor target compounds may be performed, prior to sample analyses.</b></p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 4</b> Exhibit D - Aroclor: Section 9.2.2</p>	<p>The following Section:</p> <p>Each GC/ECD system must be initially calibrated upon award of the contract, whenever major instrument maintenance or modification is performed (e.g., column replacement or repair, cleaning or replacement of the ECD, etc.), or if the calibration verification technical acceptance criteria have not been met. Also, for any sample in which an Aroclor, other than Aroclor 1016 or Aroclor 1260 is detected, results for the specific Aroclor(s) may only be reported if the Aroclor(s) have been calibrated using multipoint standards (five-point). If time remains in the 12-hour period after a valid five-point initial calibration for a detected Aroclor(s) has been performed, then samples containing the Aroclor(s) may be analyzed. If the previously-analyzed five-point initial calibration containing the Aroclor(s) detected in the sample(s) is not in the same 12-hour sequence, then the sample(s) must be analyzed after a Continuing Calibration Verification (CCV) analysis containing the Aroclor(s) detected in the sample(s) that meets the criteria for CCVs in Section 9.3.</p> <p>is updated to:</p> <p>Each GC/ECD system must be initially calibrated upon award of the contract, whenever major instrument maintenance or modification is performed (e.g., column replacement or repair, cleaning or replacement of the ECD, etc.), or if the calibration verification technical acceptance criteria have not been met. Also, for any sample, in which an Aroclor (other than Aroclor 1016 or Aroclor 1260) is detected, <b>for which a valid five point calibration curve is not available, results for these specific Aroclors must be reported as an estimated concentration with the appropriate compound qualifier. Subsequently, the sample must be re-analyzed following a valid five point calibration of the specific Aroclor. All sample analysis, must be preceded by an opening CCV with an Aroclor 1016/1260 CS3 standard, at a minimum. Additional Aroclor opening CCV standards may be analyzed at the laboratory's discretion. The closing CCV must include Aroclor 1016/1260 CS3 and all detected Aroclors in the sample. When an Aroclor, other than Aroclor 1016/1260, is detected in a sample, the closing CCV CS3 standard of this detected Aroclor standard must meet opening CCV technical acceptance criteria in Section 9.3.5, if the sample was not preceded by the Aroclor included as a CS3 standard in the opening CCV."</b></p>
<p><b>Aro-Item 5</b> Exhibit D – Aroclor: Section 9.2.3.3</p>	<p>The following Section:</p> <p>“If Aroclors other than Aroclor 1016/1260 are detected in an analysis, a separate five point calibration must be prepared (Section 7.2.3.4.3) and run for that particular Aroclor.”</p> <p>is updated to:</p> <p>“If Aroclors other than Aroclor 1016/1260 are detected in <b>a sample analysis, following a single-point calibration for that particular Aroclor,</b> a separate five-point calibration must be prepared (Section 7.2.3.4.3) and run for that particular Aroclor, <b>followed by a re-analysis of the sample."</b></p>



EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 6</b> Exhibit D – Aroclor; Section 9.2.3.5</p>	<p>Analyze the initial calibration sequence as given below.</p> <p style="text-align: center;">Initial Calibration Sequence</p> <ol style="list-style-type: none"> <li>1. Aroclor 1221 CS3 (400 ng/mL)</li> <li>2. Aroclor 1232 CS3 (400 ng/mL)</li> <li>3. Aroclor 1242 CS3 (400 ng/mL)</li> <li>4. Aroclor 1248 CS3 (400 ng/mL)</li> <li>5. Aroclor 1254 CS3 (400 ng/mL)</li> <li>6. Aroclor 1262 CS3 (400 ng/mL)</li> <li>7. Aroclor 1268 CS3 (400 ng/mL)</li> <li>8. Aroclor 1016/1260 CS1 (100 ng/mL)</li> <li>9. Aroclor 1016/1260 CS2 (200 ng/mL)</li> <li>10. Aroclor 1016/1260 CS3 (400 ng/mL)</li> <li>11. Aroclor 1016/1260 CS4 (800 ng/mL)</li> <li>12. Aroclor 1016/1260 CS5 (1600 ng/mL)</li> <li>13. Instrument blank</li> </ol> <p><b>Note:</b> The single-point Aroclor standards may be analyzed after the analysis of the five levels of the Aroclor 1016/1260 standards. The steps pertaining to the instrument blank are used as part of the calibration verification as well.</p> <p>is updated to:</p> <p><b>“Initial Calibration may be performed by any of the following sequence Options given below:</b></p> <p style="text-align: center;">Initial Calibration Sequence – <b>Option 1</b></p> <ol style="list-style-type: none"> <li>1. Aroclor 1221 CS3 (400 ng/mL)</li> <li>2. Aroclor 1232 CS3 (400 ng/mL)</li> <li>3. Aroclor 1242 CS3 (400 ng/mL)</li> <li>4. Aroclor 1248 CS3 (400 ng/mL)</li> <li>5. Aroclor 1254 CS3 (400 ng/mL)</li> <li>6. Aroclor 1262 CS3 (400 ng/mL)</li> <li>7. Aroclor 1268 CS3 (400 ng/mL)</li> <li>8. Aroclor 1016/1260 CS1 (100 ng/mL)</li> <li>9. Aroclor 1016/1260 CS2 (200 ng/mL)</li> <li>10. Aroclor 1016/1260 CS3 (400 ng/mL)</li> <li>11. Aroclor 1016/1260 CS4 (800 ng/mL)</li> <li>12. Aroclor 1016/1260 CS5 (1600 ng/mL)</li> </ol> <p><b>Note:</b> The single-point Aroclor standards may be analyzed after the analysis of the five levels of the Aroclor 1016/1260 standards in Option 1 above.</p> <p style="text-align: center;"><b>OR</b></p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b><i>Aro-Item 6</i></b>  Exhibit D – Aroclor: Section 9.2.3.5  (Cont.)</p>	<p><b><u>Initial Calibration Sequence - Option 2</u></b>  5-points of Aroclor 1016/1260(100ng/mL to 1600ng/mL)  5-points of Aroclor 1221 (100ng/mL to 1600ng/mL)  5-points of Aroclor 1232(100ng/mL to 1600ng/mL)  5-points of Aroclor 1242(100ng/mL to 1600ng/mL)  5-points of Aroclor 1248(100ng/mL to 1600ng/mL)  5-points of Aroclor 1254(100ng/mL to 1600ng/mL)  5-points of Aroclor 1262(100ng/mL to 1600ng/mL)  5-points of Aroclor 1268(100ng/mL to 1600ng/mL)</p> <p style="text-align: center;"><b>OR</b></p> <p><b><u>Initial Calibration Sequence - Option 3</u></b>  5-points of Aroclor 1016/1260(100ng/mL to 1600ng/mL)  5-points or single point Aroclor 1221 (100ng/mL - 1600ng/mL or 400ng/mL)  5-points or single point Aroclor 1232 (100ng/mL - 1600ng/mL or 400ng/mL)  5-points or single point Aroclor 1242 (100ng/mL - 1600ng/mL or 400ng/mL)  5-points or single point Aroclor 1248 (100ng/mL - 1600ng/mL or 400ng/mL)  5-points or single point Aroclor 1254 (100ng/mL - 1600ng/mL or 400ng/mL)  5-points or single point Aroclor 1262 (100ng/mL- 1600ng/mL or 400ng/mL)  5-points or single point Aroclor 1268 (100ng/mL - 1600ng/mL or 400ng/mL)</p> <p><b>Note: Option 2 and 3 Initial Calibration above may be performed in any Aroclor sequence as long as a valid five-point calibration of Aroclor 1016/1260 is present. Refer to Section 7.2.3.4 for initial calibration standard concentrations.</b></p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 7</b> Exhibit D – Aroclor: Section 9.2.4.2</p>	<p>The following Section:</p> <p>“For Aroclors 1016 and 1260, an RT is measured for a minimum of 3 peaks in each of the five calibration standards and the mean RT (<math>\overline{RT}</math>) is calculated for each of the peaks as the average of the five values obtained from the five calibration standards. For Aroclors 1221, 1232, 1242, 1248, 1254, 1262, and 1268 an RT is measured for each of the peaks for a single-point calibration standard. If a valid five-point calibration is present for a specific Aroclor then an RT is measured for each of the peaks in each of the five calibration standards and the RT is calculated as the average of the five values for each of the peaks obtained from the five calibration standards. An RT is measured for the surrogates in each of the five calibration standards and the RT is calculated as the average of the five values. Calculate the RT using Equation 1:</p> <p>is updated to:</p> <p>“For Aroclors 1016 and 1260, an RT is measured for a minimum of 3 peaks in each of the five calibration standards and the mean RT (<math>\overline{RT}</math>) is calculated for each of the peaks as the average of the five values obtained from the five calibration standards. For Aroclors 1221, 1232, 1242, 1248, 1254, 1262, and 1268 an RT is measured for <b>a minimum of three</b> peaks for a single-point calibration standard. If a valid five-point calibration is present for a specific Aroclor then an RT is measured for <b>a minimum of three</b> peaks in each of the five calibration standards and the RT is calculated as the average of the five values for each of the peaks obtained from the five calibration standards. An RT is measured for the surrogates in each of the five calibration standards of <b>Aroclor 1016/1260, or from Aroclor 1016 if analyzed as a separate mixture. The surrogate <math>\overline{RT}</math></b> is calculated as the average of the five values. Calculate the <math>\overline{RT}</math> using Equation 1.”</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 8</b> Exhibit D – Aroclor: Section 9.2.4.4</p>	<p>The following Section:</p> <p>“The linearity of the instrument is determined by calculating a Percent Relative Standard Deviation (%RSD) of the Calibration Factors (CFs). Either peak area or peak height may be used to calculate CFs used in the %RSD equation.</p> <p>Five sets of CFs will be generated for the Aroclor 1016/1260 mixture, each set consisting of the CFs for each of the five peaks chosen for this mixture. The single standard for each of the other Aroclors will generate at least three CFs, one for each selected peak, unless a valid five-point calibration is present for a specific Aroclor, in which case five sets of CFs will be generated for the specific Aroclor.</p> <p>Calculate CFs, the Mean CF (CF), and the %RSD of the CFs for each peak in a selected set of a minimum of 3 major peaks for each Aroclor using Equations 2, 3, and 4.”</p> <p>Is updated to:</p> <p>“The linearity of the instrument is determined by calculating a Percent Relative Standard Deviation (%RSD) of the Calibration Factors (CFs). Either peak area or peak height may be used to calculate CFs used in the %RSD equation.</p> <p>Five sets of CFs will be generated for the Aroclor 1016/1260 mixture, each set consisting of the CFs for each of the peaks (<b>minimum of three</b>) chosen for this mixture. The single standard for each of the other Aroclors will generate at least three CFs, one for each selected peak, unless a valid five-point calibration is present for a specific Aroclor, in which case five sets of CFs will be generated for the specific Aroclor. <b>Calibration Factors (CF) for the surrogates must be generated for each of the five calibration standards of Aroclor 1016/1260, or from Aroclor 1016 if analyzed as a separate mixture.</b></p> <p><b>The <math>\overline{CF}</math> of each surrogate compound is calculated as the average of the five values.</b></p> <p>Calculate CFs, the Mean CF (CF), and the %RSD of the CFs for each peak in a selected set of a minimum of 3 major peaks for each Aroclor using Equations 2, 3, and 4.”</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b><i>Aro-Item 9</i></b> Exhibit D – Aroclor: Section 9.3.1</p>	<p>The following Section: “Summary of Continuing Calibration Verification (CCV)</p> <p>The analyses of instrument blanks and the required Aroclor CS3 Standard Mixtures (see Section 9.3.2) constitute the calibration verification. Sample (including LCS and MS/MSD) and required blank (method/sulfur cleanup) data are not acceptable unless bracketed by acceptable analyses of instrument blanks and the Aroclor CS3 Standard Mixtures. In cases where a valid five-point initial calibration for the detected Aroclors is required, that initial calibration may be substituted for the opening CCV.”</p> <p>Is updated to: “Summary of Continuing Calibration Verification (CCV)</p> <p><b>The analyses of instrument blanks and the required Aroclor CS3 Standard Mixtures (see Section 9.3.2) constitute the calibration verification. Sample (including LCS and MS/MSD) and required blank (method/sulfur cleanup) data are not acceptable unless bracketed by acceptable analyses of instrument blanks and the Aroclor CS3 Standard Mixtures.”</b></p> <p>Note the last sentence in the section is deleted: <b>“In cases where a valid five-point initial calibration for the detected Aroclors is required, that initial calibration may be substituted for the opening CCV.”</b></p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b><i>Aro-Item 10</i></b> Exhibit D – Aroclor: Section 9.3.2.1</p>	<p>The following section:</p> <p>An instrument blank and Aroclor 1016/1260 CS3 Standard Mixture must bracket one end of a 12-hour period (opening CCV) during which sample and required blank data are collected, and a second instrument blank and the Aroclor 1016/1260 CS3 Standard Mixture must bracket the other end of the 12-hour period (closing CCV). If during any 12-hour period, an Aroclor other than 1016 or 1260 is detected and the 12-hour time period for the five-point initial calibration of the detected Aroclor(s) has elapsed, then an instrument blank and a CS3 standard of the detected Aroclor(s) must bracket both ends of the 12-hour period. If the opening CCV does not meet all technical acceptance criteria, then a new valid five-point initial calibration for the detected Aroclors must be performed before samples containing the detected Aroclors may be analyzed.</p> <p>is updated to:</p> <p><b>“An instrument blank and Aroclor 1016/1260 CS3 Standard Mixture must bracket one end of a 12-hour period (opening CCV) during which sample and required blank data are collected, a second instrument blank, Aroclor 1016/1260 CS3 and CS3 Standard Mixture (s) of any other detected Aroclor (s) must bracket the other end of a 12-hour period (closing CCV). Each opening CCV must include an instrument blank and Aroclor 1016/1260 CS3 standard, additional Aroclor CS3 standards may be performed at the laboratory’s discretion. If a valid five-point calibration is available for Aroclor (s) other than 1016/1260, an opening CCV with an instrument blank and Aroclor 1016/1260 CS3 is sufficient, however, the closing CCV must include all Aroclors detected and meet opening CCV technical acceptance criteria in Section 9.3.5.3.</b></p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b><i>Aro-Item 11</i></b> Exhibit D – Aroclor: Section 9.3.2.2</p>	<p>For the 12-hour period immediately following the initial calibration sequence, the instrument blank is the last step in the initial calibration sequence and brackets the front end of that 12-hour period. The injection of the instrument blank starts the beginning of the 12-hour period (Section 10.3.2.1.1), followed by the injection of the Aroclor 1016/1260 CS3 Standard. Samples (including LCSs and MS/MSDs) and required blanks (method/sulfur cleanup) may be injected for 12 hours from the injection of the instrument blank. The first injections immediately after that 12-hour period must be an instrument blank and the Aroclor 1016/1260 CS3 Standard Mixture. The instrument blank must be analyzed first, before the standard.</p> <p>Is updated to:</p> <p>“The injection of <b>an</b> instrument blank starts the beginning of the 12-hour period (Section 10.3.2.1.1), followed by the injection of Aroclor 1016/1260 CS3 Standard <b>and any additional CS3 Standard Mixture(s) as determined by the laboratory.</b> Samples (including LCSs and MS/MSDs) and required blanks (method/sulfur cleanup) may be injected for 12 hours from the injection of the instrument blank. The first injections immediately after <b>the previous</b> 12-hour period must be an instrument blank, Aroclor 1016/1260 CS3 Standard <b>and CS3 Standard Mixture(s) of any other detected Aroclor.</b> A closing CCV must bracket the end of a 12-hour sequence.</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 12</b> Exhibit D – Aroclor: Section 9.3.2.3</p>	<p>The following Section:</p> <p>“The analyses of the instrument blank and CS3 Standard Mixture (closing CCV) immediately following one 12-hour period may be used to begin the subsequent 12-hour period as an opening CCV, provided that they meet the technical acceptance criteria in Section 9.3.5. In that instance, the subsequent 12-hour period must be bracketed by the acceptable analyses of an instrument blank and a CS3 Standard Mixture (closing CCV), in that order. Those two analyses may in turn be used to bracket the front end of yet another 12-hour period (opening CCV). This progression may continue every 12 hours until such time as any of the instrument blanks or the CS3 Standard Mixture fails to meet the technical acceptance criteria in Section 9.3.4, or an Aroclor has been detected in a sample for which the corresponding CS3 standard was not performed for the opening CCV. The 12-hour time period begins with the injection of the instrument blank.”</p> <p>is updated to:</p> <p>“The analyses of the instrument blank and CS3 Standard Mixture(s) (closing CCV) immediately following one 12-hour period may be used to begin the subsequent 12-hour period as an opening CCV, provided that they meet the technical acceptance criteria in Section 9.3.5. In that instance, the subsequent 12-hour period must be bracketed by the acceptable analyses of an instrument blank and a CS3 Standard Mixture(s) (closing CCV), in that order. Those two analyses may in turn be used to bracket the front end of yet another 12-hour period (opening CCV). This progression may continue every 12 hours until such time as any of the instrument blanks or the <b>required</b> CS3 Standard Mixture (s) fails to meet the technical acceptance criteria in <b>Section 9.3.5</b>.</p>
<p><b>Aro-Item 13</b> Exhibit D – Aroclor: Section 9.3.2.4</p>	<p>The following section is deleted:</p> <p><b>“If more than 12 hours have elapsed since the injection of the instrument blank that bracketed a previous 12-hour period, an acceptable instrument blank and an Aroclor 1016/1260 CS3 standard must be analyzed in order to start a new sequence. This requirement applies even if no analyses were performed since that standard was injected.”</b></p>



EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 14</b> Exhibit D – Aroclor: Section 9.3.2.5</p>	<p>The following Section: “The requirements for running the instrument blanks and CS3 Aroclor 1016/1260 Standard Mixture are waived when no samples (including LCSs and MS/MSDs), dilutions, reanalyses, or required blanks (method/sulfur cleanup) are analyzed during that 12-hour period. To resume analysis, using the existing initial calibration, the Contractor must first analyze an instrument blank and CS3 Aroclor 1016/1260 Standard that meet the technical acceptance criteria.”</p> <p>Is updated to: “The requirements for running the instrument blanks and CS3 Aroclor 1016/1260 Standard Mixture are waived when no samples (including LCSs and MS/MSDs), dilutions, reanalyses, or required blanks (method/sulfur cleanup) are analyzed during that 12-hour period. To resume analysis, using the existing initial calibration, the Contractor must first analyze an <b>opening CCV that consist of</b> an instrument blank, Aroclor 1016/1260 CS3 Standard, <b>and any additional CS3 Aroclor Standard (s)</b> that meet the technical acceptance criteria. <b>Note: Additional opening CCV CS3 Aroclor Standard (s) determined to be necessary are at the laboratory’s discretion.</b>”</p>
<p><b>Aro-Item 15</b> Exhibit D – Aroclor: Section 9.3.2.5</p>	<p>The current “Section 9.3.2.5” is updated to “<b>Section 9.3.2.4</b>”.</p>
<p><b>Aro-Item 16</b> Exhibit D – Aroclor: Section 9.3.2.6</p>	<p>The following Section: “If the entire 12-hour period is not required for the analyses of all samples and blanks to be reported and all data collection is to be stopped, the sequence must be ended with the instrument blank/CS3 Aroclor Standard Mixture (s) (1016/1260 and all detected Aroclors) combination.”</p> <p>is updated to: “If the entire 12-hour period is not required for the analyses of all samples and blanks to be reported and all data collection is to be stopped, the sequence must <b>end with an appropriate closing CCV combination, that is, an instrument blank/CS3 Aroclor 1016/1260 and all detected Aroclor CS3 Standard Mixture(s).</b>”</p>
<p><b>Aro-Item 17</b> Exhibit D – Aroclor: Section 9.3.2.6</p>	<p>The current “Section 9.3.2.6” is updated to “<b>Section 9.3.2.5</b>”.</p>
<p><b>Aro-Item 18</b> Exhibit D – Aroclor: Section 9.3.2.7</p>	<p>The following Section: “No more than 14 hours may elapse from the injection beginning the opening CCV (instrument blank) and the injection ending the closing CCV (Aroclor Standard).”</p> <p>Is updated to: “No more than 14 hours may elapse from the injection beginning the opening CCV (instrument blank) and the injection ending the closing CCV (Aroclor Standard). <b>If more than 12 hours elapse between the injections of the two instrument blanks (opening and closing CCV) that bracket a 12-hour period in which samples or required blanks are analyzed, then the time between the injection of the instrument blank (closing CCV) and the preceding sample may not exceed the length of one chromatographic run.</b>”</p>

<p><b>Aro-Item 19</b> Exhibit D – Aroclor: Section 9.3.2.7</p>	<p>The current “Section 9.3.2.7” is updated to “Section 9.3.2.6”.</p>
<p><b>Aro-Item 20</b> Exhibit D – Aroclor: Section 9.3.4</p>	<p>The following Section: “Calculations for Calibration Verification</p> <p>For each analysis of the CS3 Individual Standard Mixture(s) used to demonstrate calibration verification, calculate the Percent Difference between the CF of each Aroclor peak (including the surrogates) in the standard mixture and the CF from the initial calibration, using Equation 5.”</p> <p>is updated to: “Calculations for Calibration Verification</p> <p>For each analysis of the CS3 Individual Standard Mixture(s) used to demonstrate calibration verification, calculate the Percent Difference between the CF of each Aroclor peak <b>in the standard mixture and the CF from the initial calibration, using Equation 5. Calculate the Percent Difference between CF of surrogates in each standard mixture and the CF from the initial calibration of Aroclor 1016/1260 or 1016 if analyzed as a separate mixture, using Equation 5.”</b></p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 21</b> Exhibit D – Aroclor: Section 9.3.5.3</p>	<p>The following Section:  “For the opening CCV, Percent Difference for each Aroclor peak and surrogates calculated from the CCV standard must not exceed <math>\pm 15\%</math>. For the closing CCV, Percent Difference for each Aroclor peak and surrogates calculated from the CCV must not exceed <math>\pm 50\%</math>. If the Percent Difference for the closing CCV is <math>\pm 15\%</math> or less, then it can be used for the opening CCV of the next 12-hour period.”  is updated to:  “For the opening CCV, Percent Difference for each Aroclor peak and surrogates calculated from the CCV standard must not exceed <math>\pm 15\%</math>. For the closing CCV, Percent Difference for each Aroclor peak and surrogates calculated from the CCV must not exceed <math>\pm 50\%</math>. If the Percent Difference for the closing CCV is <math>\pm 15\%</math> or less, then it can be used for the opening CCV of the next 12-hour period.  <b>Note: When a required closing CCV of an Aroclor other than Aroclor 1016/1260 is preceded by an opening CCV of Aroclor 1016/1260 CS3 only, the percent difference of each Aroclor peak and surrogate compound must not exceed <math>\pm 15\%</math>.</b>”</p>
<p><b>Aro-Item 22</b> Exhibit D – Aroclor: Section 9.3.6.7</p>	<p>The following Section:  “If a successful instrument blank and Aroclor 1016/1260 standard cannot be run after an interruption in analysis (Section 9.3.2.6), an acceptable initial calibration must be run before sample data may be collected. All acceptable sample (including LCS and MS/MSDs) and required blank (method/sulfur cleanup) analyses must be preceded and followed by acceptable standards and instrument blanks, as described in Section 9.3.2.”  is updated to:  “If a successful instrument blank and Aroclor 1016/1260 standard cannot be run after an interruption in analysis (Section 9.3.2.6), an acceptable initial calibration must be run before sample data may be collected. All acceptable sample (including LCS and MS/MSDs) and required blank (method/sulfur cleanup) analyses must be preceded and followed by acceptable instrument blanks and standards (<b>opening and closing CCV</b>) as described in Section 9.3.2.”</p>
<p><b>Aro-Item 23</b> Exhibit D - Aroclor: Section 10.2.2.3.1</p>	<p>The following Section:  “Using a syringe or a volumetric pipet, transfer all of the hexane extract to a 10mL vial and, in a fume hood, carefully add 5mL of the 1:1 (v/v) sulfuric acid/water solution.”  is updated to:  “Using a syringe or a volumetric pipet, transfer <b>an aliquot (1 or 2 mL)</b> of the hexane extract to a 10mL vial and, in a fume hood, carefully add 5mL of the 1:1 (v/v) sulfuric acid/water solution.”</p>
<p><b>Aro-Item 24</b> Exhibit D – Aroclor: Section 10.2.2.3.1 and 10.2.2.3.2</p>	<p>The following Sections will be switched:  The language for the updated sentence of Section 10.2.2.3.1 will become Section 10.2.2.3.2 and vice versa.</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)		
<b>Aro-Item 25</b> Exhibit D – Aroclor: Section 10.3.2.1	The following Section: “Analytical Sequence		
	All acceptable samples must be analyzed within a valid analysis sequence as given below:		
	Time	Injection #	Material Injected
		1-12	First 12 steps of the initial calibration
	0 hr.	13	Instrument blank
		14	Aroclor 1016/1260
			Standard
			Sample
	12 hr.		Last sample
		1 <sup>st</sup> injection past 12 hr.	Instrument blank
			Aroclor 1016/1260
		2 <sup>nd</sup> injection past 12 hr.	standard
			Subsequent samples
	Another 12 hrs.		Last sample
		1 <sup>st</sup> injection past 12 hr.	Instrument blank
			Aroclor 1016/1260
		2 <sup>nd</sup> injection past 12 hr.	standard
		3 <sup>rd</sup> injection past 12 hr.	Sample
	is updated to:		
	“Analytical Sequence		
	All acceptable samples must be analyzed within a valid analysis sequence as given below:		
	<b>Time</b>	<b>Injection #</b>	<b>Material Injected</b>
		1-12 (or 5-points of all Aroclors)	First 12 steps of the initial calibration (or 5-points of all Aroclors)
	0 hr.	13	Instrument blank
		14	Aroclor 1016/1260 Standard
		<b>15</b>	<b>Additional Aroclor CS3</b>
			<b>Standard (optional)</b>
		<b>16</b>	<b>Subsequent Samples</b>
	12 hr.		Last sample
		1 <sup>st</sup> injection past 12 hr.	Instrument blank
		2 <sup>nd</sup> injection past 12 hr.	<b>Aroclor 1016/1260 Standard</b>
			<b>Detected Aroclor CS3</b>
		<b>3<sup>rd</sup> injection past 12 hr.</b>	<b>Standard (as required)</b>
	<b>14 hr.</b>	<b>4<sup>th</sup> injection past 12 hr.</b>	<b>Detected Aroclor CS3</b>
			<b>Standard (as required)</b>
			Subsequent Samples
	Another 12 hrs.		Last sample
		1 <sup>st</sup> injection past 12 hr.	Instrument blank
		2 <sup>nd</sup> injection past 12 hr.	Aroclor 1016/1260 standard
		3 <sup>rd</sup> injection past 12 hr.	Sample

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 26</b> Exhibit D – Aroclor: Section 10.3.2.1.1</p>	<p>The following Section:          “The first 12 hours are counted from injection #13, not from injection #1. Samples may be injected until 12:00 hours have elapsed. All subsequent 12-hour periods are timed from the injection of the instrument blank that brackets the front end of the samples. If more than 12 hours elapse between the injections of two instrument blanks that bracket a 12-hour period in which samples or required blanks are analyzed, then the time between the injection of the instrument blank and the preceding sample may not exceed the length of one chromatographic run. While the 12-hour period may not be exceeded, the laboratory may run instrument blanks and standards more frequently, for instance, to accommodate staff working on 8-hour shifts. No more than 14 hours may elapse from the injection beginning the opening CCV (instrument blank) and the injection ending the closing CCV (Aroclor Standard).”</p> <p>is updated to:  <b>“Injections #1 through #12 in Section 10.3.2.1 may be expanded to include all injections of initial calibration standards as specified in Option 2 and 3 in Section 9.2.3.5. The first 12 hours are counted from injection #13, not from injection #1, in the initial calibration sequence Option 1 detailed in Section 10.3.2.1. Alternately, the first 12 hours will be counted from the injection of the instrument blank of an opening CCV when performed immediately after completion of the initial calibration Options 2 and 3. Samples may be injected until 12:00 hours have elapsed. All subsequent 12-hour periods are timed from the injection of the instrument blank that brackets the front end of the samples. If more than 12 hours elapse between the injections of two instrument blanks that bracket a 12-hour period in which samples or required blanks are analyzed, then the time between the injection of the instrument blank and the preceding sample may not exceed the length of one chromatographic run. While the 12-hour period may not be exceeded, the laboratory may run instrument blanks and standards more frequently, for instance, to accommodate staff working on 8-hour shifts. No more than 14 hours may elapse from the injection beginning the opening CCV (instrument blank) and the injection ending the closing CCV (Aroclor Standard).”</b></p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 27</b> Exhibit D – Aroclor: Section 10.3.3.2</p>	<p>The following:  <i>“If the <b>response</b> of the largest peak for any Aroclor is greater than the <b>response</b> of the same peak in the high-point standard in the initial calibration for both columns, then the sample must be diluted to have the <b>response</b> of the largest peak of the lower of the two column analyses be between the low and high calibration standards.”</i></p> <p>Is updated to:  <i>“If the <b>concentration</b> of the largest peak for any Aroclor is greater than the <b>concentration</b> of the same peak in the high-point standard in the initial calibration for both columns (the largest peak on the second column may be a different peak), then the sample must be diluted to have the <b>concentration</b> of the largest peak of the lower of the two column analyses be between the low and high calibration standards.”</i></p>
<p><b>Aro-Item 28</b> Exhibit D – Aroclor: Section 10.3.3.8</p>	<p>The following:  <i>“Use the results of the original analysis to determine the approximate DF required to get the largest analyte peak (for the lower of the two column <b>responses</b>) within the initial calibration range.”</i></p> <p>Is updated to:  <i>“Use the results of the original analysis to determine the approximate DF required to get the largest analyte peak (for the lower of the two column <b>concentrations</b>) within the initial calibration range.”</i></p>
<p><b>Aro-Item 29</b> Exhibit D – Aroclor: Section 11.1.1.4</p>	<p>The following Section:  <i>“When an Aroclor other than 1016 or 1260 is detected in a sample, a valid five-point calibration curve specific to that Aroclor must be run, followed by reanalysis of the sample or appropriately diluted sample with the detected Aroclor present. The Mean Calibration Factor (CF) will be used to quantitate the analyte in the sample.”</i></p> <p>is updated to:  <i>“When an Aroclor other than 1016 or 1260 is detected in a sample, <b>using a single point calibration</b>, a valid five point calibration of the specific Aroclor must be <b>performed</b>, followed by reanalysis of the sample or appropriately diluted sample (<b>if the sample concentration of Aroclor exceeded calibration</b>) with the Aroclor detected initially. <b>If a valid five-point calibration curve is available for an Aroclor other than 1016 or 1260, the Mean Calibration Factor ( <math>\overline{CF}</math> ) will be used for quantitation of the Aroclor in the sample, however, quantitation of the surrogate compounds using <i>surrogate data from the initial five-point Aroclor 1016/1260 or from Aroclor 1016</i> if analyzed as a separate mixture.</b></i></p> <p><b>Note:</b> An estimated concentration (reported with an “S” flag) of the initial detection for an Aroclor other than 1016 or 1260, using a single point calibration standard will be quantitated using the Calibration Factor (CF), of at least 3 major peaks, from the specific single point calibration standard. The surrogates will be quantitated using the initial five-point Aroclor 1016/1260 or from Aroclor 1016 if analyzed as a separate mixture.</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 30</b>  Exhibit D – Aroclor: Section 11.2.1.1.1, Equation 7  The equation is further expanded to allow for greater flexibility in the preparation and cleanup steps as follows:</p> $\text{Concentration } \mu\text{g/L} = \left( \frac{A_x}{\overline{\text{CF}}} \right) \left( \frac{\text{DF}}{V_i} \right) \left( \frac{V_t}{V_o} \right) \left( \frac{\text{CV}_{\text{out}}}{\text{CV}_{\text{in}} \times E} \right)_1 \left( \frac{\text{CV}_{\text{out}}}{\text{CV}_{\text{in}} \times E} \right)_2 \cdots \left( \frac{\text{CV}_{\text{out}}}{\text{CV}_{\text{in}} \times E} \right)_n$ <p>where,</p> <p style="margin-left: 150px;"> <math>A_x</math> = Peak area or peak height of the compound to be measured.  <math>\overline{\text{CF}}</math> = Mean Calibration Factor determined from the initial calibration for the compound to be measured, in area/ng.  <math>\text{DF}</math> = Dilution Factor.  <math>V_i</math> = Volume of extract injected in <math>\mu\text{L}</math>.  <math>V_t</math> = Volume of extract produced by the preparation process (extraction and concentration), and before cleanup, in <math>\mu\text{L}</math>.  <math>V_o</math> = Volume of the original water sample extracted in mL. Note: for instrument blanks and sulfur blanks assume a volume of 1000mL.  <math>\text{CV}_{\text{out}}</math> = Volume of extract produced by a cleanup process (cleanup and concentration), in <math>\mu\text{L}</math>.  <math>\text{CV}_{\text{in}}</math> = Volume of extract subjected to a cleanup process, in <math>\mu\text{L}</math>.  <math>E</math> = The efficiency of the cleanup process expressed as a fraction of material that passes through or is not mechanically lost during the cleanup step (e.g. 50% efficiency must be expressed as 0.50) </p>	
<p><b>Aro-Item 31</b>  Exhibit D – Aroclor: Section 11.2.1.2.1, Equation 9  The equation is further expanded to allow for greater flexibility in the preparation and cleanup steps as follows:</p> $\text{Concentration } \mu\text{g/kg} = \left( \frac{A_x}{\overline{\text{CF}}} \right) \left( \frac{\text{DF}}{V_i} \right) \left( \frac{V_t}{W_t \times D} \right) \left( \frac{\text{CV}_{\text{out}}}{\text{CV}_{\text{in}} \times E} \right)_1 \left( \frac{\text{CV}_{\text{out}}}{\text{CV}_{\text{in}} \times E} \right)_2 \cdots \left( \frac{\text{CV}_{\text{out}}}{\text{CV}_{\text{in}} \times E} \right)_n$ <p>where,</p> <p><math>A_x</math>, <math>\overline{\text{CF}}</math>, <math>\text{DF}</math>, <math>V_i</math>, <math>V_o</math>, <math>\text{CV}_{\text{out}}</math>, <math>\text{CV}_{\text{in}}</math>, and <math>E</math> are the same as Equation 7 above.</p> <p style="margin-left: 150px;"> <math>W_t</math> = Weight of the original soil sample extracted in g.  <math>D = \frac{100 - \% \text{Moisture}}{100}</math> </p>	

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 32</b> Exhibit D – Aroclor: Section 11.2.2</p>	<p>The following Section: “Target Compounds</p> <p>The quantitation of Aroclors must be accomplished by comparing the heights or the areas of each of a minimum of 3 major peaks of the Aroclor in the sample with the CF for the same peaks established during the specific five-point calibration. The concentration of multi-component analytes is calculated by using Equations 7 and 9, where <math>A_x</math> is the area for each of the major peaks of the Aroclor. The concentration of each peak is determined and then a mean concentration for a minimum of 3 major peaks is determined on each column.”</p> <p>is updated to: “Target Compounds</p> <p><b>Except for an estimated value reported for an Aroclor other than 1016 or 1260,</b> The quantitation of Aroclors must be accomplished by comparing the heights or the areas of each of a minimum of 3 major peaks of the Aroclor in the sample with the CF for the same peaks established during the specific five-point calibration. The concentration of multi-component analytes is calculated by using Equations 7 and 9, where <math>A_x</math> is the area for each of the major peaks of the Aroclor. The concentration of each peak is determined and then a mean concentration for a minimum of 3 major peaks is determined on each column.”</p>
<p><b>Aro-Item 33</b> Exhibit D – Aroclor: Section 11.2.2.1</p>	<p>The following Section: “Note that the CFs used for the quantitation of Aroclors are the CFs from the concentration of the specific five-point calibration.”</p> <p>is updated to: <b>“To quantitate and report the estimated concentration of an Aroclor other than 1016 or 1260, use the Calibration Factor (CF) for a minimum of 3 major peaks, from the single point Aroclor calibration standard used for the Aroclor pattern recognition. It will be necessary to substitute the single Calibration Factor (CF) for the Mean CF (<math>\overline{CF}</math>) in Equations 7, 8, 9 and 10.</b></p> <p><b>Note:</b> The CFs used for the quantitation of <b>target</b> Aroclors are the CFs from the concentration of the specific five-point calibration.”</p>



EXHIBIT/SECTION(S)	MODIFICATION (S)
<b>Aro-Item 34</b> Exhibit D – Aroclor: Section 11.2.3.1, Equation 12 The equation is further expanded to allow for greater flexibility in the preparation and cleanup steps as follows:  <b>EQ. 12            Adjusted CRQL Calculation for Water Samples</b>	$\text{Adjusted CRQL} = (\text{Contract CRQL}) \left( \frac{V_x}{V_o} \right) \left( \frac{V_t}{V_y} \right) (DF) \left( \frac{CV_{out}}{CV_{in} \times E} \right)_1 \left( \frac{CV_{out}}{CV_{in} \times E} \right)_2 \cdots \left( \frac{CV_{out}}{CV_{in} \times E} \right)_n$ <p>where,</p> <p><b>Contract CRQL</b>    =    The CRQL value reported in Exhibit C – Aroclors (µg/L).</p> <p><b>V<sub>x</sub></b>                =    Contract sample volume (1000 mL).</p> <p><b>V<sub>o</sub></b>                =    Volume of water extracted in mL. Note: for instrument and sulfur blanks assume a volume of 1000mL.</p> <p><b>V<sub>t</sub></b>                =    Volume of water <i>concentrated extract</i> in µL.</p> <p><b>V<sub>y</sub></b>                =    Contract concentrated extract volume (10,000 µL).</p> <p><b>DF</b>                =    Dilution Factor.</p> <p><b>CV<sub>out</sub></b>            =    Volume of extract produced by a cleanup process (cleanup and concentration), in µL.</p> <p><b>CV<sub>in</sub></b>            =    Volume of extract subjected to a cleanup process, in µL.</p> <p><b>E</b>                 =    The efficiency of the cleanup process expressed as a fraction of material that passes through or is not mechanically lost during the cleanup step (e.g. 50% efficiency must be expressed as 0.50).</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b>Aro-Item 35</b> Exhibit D – Aroclor: Section 11.2.3.2 Equation 13 The equation is further expanded to allow for greater flexibility in the preparation and cleanup steps as follows:</p> <p><b>EQ. 13            Adjusted CRQL Calculation for Soil/Sediment Samples</b></p> $\text{Adjusted CRQL} = (\text{Contract CRQL}) \left( \frac{W_x}{W_s \times D} \right) \left( \frac{V_t}{V_y} \right) (\text{DF}) \left( \frac{CV_{out}}{CV_{in} \times E} \right)_1 \left( \frac{CV_{out}}{CV_{in} \times E} \right)_2 \dots \left( \frac{CV_{out}}{CV_{in} \times E} \right)_n$ <p><b>where,</b></p> <p><b>Contract CRQL        =    The CRQL value reported in Exhibit C – Aroclors (µg/Kg).</b></p> <p><b>W<sub>x</sub>                        =    Contract sample weight (30 g).</b></p> <p><b>W<sub>s</sub>                        =    Weight of sample extracted in grams (g).</b></p> <p><b>D                         =    <math>\frac{100 - \% \text{Moisture}}{100}</math></b></p> <p><b>V<sub>t</sub>                        =    Volume of the concentrated extract in µL.</b></p> <p><b>V<sub>y</sub>                        =    Contract concentrated extract volume (10,000 µL).</b></p> <p><b>DF                        =    Dilution Factor.</b></p> <p><b>CV<sub>out</sub>                   =    Volume of extract produced by a cleanup process (cleanup and concentration), in µL.</b></p> <p><b>CV<sub>in</sub>                    =    Volume of extract subjected to a cleanup process, in µL.</b></p> <p><b>E                         =    The efficiency of the cleanup process expressed as a fraction of material that passes through or is not mechanically lost during the cleanup step (e.g. 50% efficiency must be expressed as 0.50).</b></p>	
<p><b>Aro-Item 36</b> Exhibit D – Aroclor: Section 11.2.4</p>	<p>The following Section :</p> <p>“The concentrations for surrogate compounds can be calculated by using Equation 7 (for waters) and Equation 9 (for soils) and the CF from the most recent initial calibration.”</p> <p>is updated to:</p> <p>“The concentrations for surrogate compounds can be calculated by using Equation 7 (for waters) and Equation 9 (for soils) and the CF from <b>a valid initial five-point calibration of Aroclor 1016/1260 or from Aroclor 1016 if analyzed as a separate mixture.</b>”</p>

EXHIBIT/SECTION(S)	MODIFICATION (S)
<p><b><i>Aro-Item 37</i></b> Exhibit D – Aroclor: Section 11.3.5</p>	<p>The following Section: “The RT for each of the surrogates must be within the RT window (Section 9.2.4.3) for both GC columns.”</p> <p>is updated to: “<b>Surrogate compounds Retention Time (RT) must be compared to the window established during a valid initial five-point calibration of Aroclor 1016/1260 or from Aroclor 1016 if analyzed as a separate mixture.</b> The RT for each of the surrogates must be within the RT window (Section 9.2.4.3) for both GC columns.”</p>
<p><b><i>Aro-Item 38</i></b> Exhibit D – Aroclor: Section 12.3.4.2</p>	<p>The following Section: “Calculate individual compound recoveries of the LCS using Equation 14”</p> <p>is updated to: “Calculate individual compound recoveries of the LCS using <b>Equation 15</b>”.</p>

Attachment E

USEPA, Solid Waste and Emergency Response Branch,  
Office of Emergency and Remedial Response  
Quick Fact Sheet EPA 540-F-94-028

*Using Qualified Data to Document an Observed Release and Observed Contamination*



## Using Qualified Data to Document an Observed Release and Observed Contamination

Office of Emergency and Remedial Response (5204G)

Quick Reference Fact Sheet

This fact sheet discusses the use of the U.S. Environmental Protection Agency's (EPA) Contract Laboratory Program (CLP) data and other sources of data qualified with a "J", "U", or "UJ" qualified or flag. This guidance provides a management decision tool for the optional use of qualified data to document all observed release and observed contamination by chemical analysis under EPA's Hazard Ranking System (HRS). The analyte and sample matrix (i.e., soil or water) specific adjustment factors given in this fact sheet allow biased CLP and non-CLP data to be adjusted to meet the HRS criteria documenting an observed release and observed contamination with data that are of known and documented quality. This fact sheet does not address using qualified data for identifying hazardous substances in a source.

### INTRODUCTION

The EPA established the HRS to rank hazardous waste sites for National Priorities List (NPL) purposes under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). This fact sheet was developed in response to a need to determine the usability of qualified data for site assessment and HRS scoring purposes. This fact sheet illustrates that qualified data are often of sufficiently known and documented quality, and may be used in establishing an observed release and observed contamination. This fact sheet explains rationale for why some qualified data may be used for HRS purposes; presents the background information needed to use qualified data, with and without adjustment factors; provides examples of qualified data use, and discusses issues raised during the development of the adjustment factor approach.

Under the HRS, chemical analytical data we are often used to demonstrate an observed release and observed contamination when the release sample concentration is three times the background concentration and background levels are greater than or equal to the

appropriate detection limit; or if the release sample concentration is greater than or equal to the appropriate quantitation limit when background levels are below the appropriate detection limit. The release must also be at least partially attributable to the site under investigation (*Hazard Ranking System, Final Rule, 40 CFR Part 300, App. A*). The data used to establish the release must be of known and documented quality. (*Hazard Ranking System Guidance Manual, Interim Final, November 1992, OSWER Directive 9345.1-07*). Data that cannot be validated may not be of known and documented quality. For more information on observed release and observed contamination, refer to the fact sheets: *Establishing an Observed Release*, September 1995, PB94-963314; *Establishing Areas of Observed Contamination*, September 1995, PB94-963312; and *Establishing Background Levels*, September 1995, PB94-963313. The factor of three represents the minimum difference in sample results that demonstrate an increase in contaminant concentration above background levels, with reasonable confidence.

Although much of the analytical data used for identifying an observed release is generated under EPA's CLP, this fact sheet applies to all data regardless of the source of the data (non-CLP data). EPA procedures require that

CLP analytical data be reviewed, or validated by EPA or third party reviewers, to ensure the data are of known and documented quality and that the determination be discussed in a data validation report that accompanies the analytical results. Based on this data validation, CLP data are classified into three categories: (1) data for which all quality control (QC) requirements have passed contract required acceptance criteria, (2) data for which at least one QC requirement has not met acceptance criteria; and (3) data for which most or all QC requirements have not met acceptance criteria. Data in the first category typically are not qualified. Data in the second category are often qualified with a "J" qualifier and, as discussed in this fact sheet, are usually usable for HRS purposes. Data in the third category are usually qualified by an "R" qualifier and are not usable for HRS purposes.

Whether data are placed into the second or third category is determined by the amount of bias associated with the analytical results. Data validation evaluates biases resulting from laboratory analytical deficiencies or sample matrices to determine whether the data are usable. Bias indicates that the reported concentration is either higher or lower than the actual concentration, and the data validation report identifies the direction of the bias or if the bias is unknown.

The EPA CLP also sets minimum quantitation limits for all analytes; the Contract Required Quantitation Limit (CRQL) for organic analytes and the Contract Required Detection Limit (CRDL) for inorganic analytes. For HRS purposes and for this fact sheet, the term CRQL refers to both the contract required quantitation limit and actual contract required detection limit. (40 CFR Part 300, App. A). The CRQLs are substance specific levels that a CLP laboratory must be able to routinely and reliably detect specific sample matrices (i.e.; soil, water, sediment). The CRQLs are usually set above most instrument detection limits (IDLs) and method detection limits (MDLs).

## CONSIDERATIONS FOR NON-CLP DATA

Because various laboratories and analytical methods may be used to develop non-CLP data, the following list provides the general information, sufficient for determining whether non-CLP data are usable for HRS Purposes.

- (1) Identification of the method used for analysis. Methods include RCRA methods, SW-846, EPA

methods, etc.

- (2) Quality control (QC) data. Check each method of analysis to determine if specific QC requirements are defined. If not, seek out another method.
- (3) Instrument-generated data sheets for sample results. These data sheets would be the equivalent of Form I's in CLP data.
- (4) MDLs and sample quantitation limits (SQLs). The analytical method should provide the MDL. The SQL is an adjusted MDL using sample specific measurements such as percent moisture and weight.
- (5) Data validation report.

## USE OF BIASED QUALIFIED DATA

In the past, all qualified data have been inappropriately perceived by some people as data of low confidence or poor quality and have not been used for HRS evaluation. With careful assessment of the nature of the analytical biases or QC deficiencies in the data on a case-by-case basis, qualified data can represent an additional resource of data for establishing an observed release. Further, the D.C. District Court of Appeals in 1996 upheld EPA's case-by-case approach to assess data quality. In reviewing the use of qualified data to identify an observed release, the Court stated that if there are deficiencies in the data, "...the appropriate response is to review the deficiencies on a 'case-by-case basis' to determine their impact on 'usability of the data.'" The Court also stated with regards to data quality that, "...EPA does not face a standard of absolute perfection .... Rather, it is statutorily required to 'assure, to the maximum extent *feasible*,' that it 'accurately assesses the relative degree of risk' posed by sites" [*Board of Regents of the University of Washington, et al., v. EPA*, No.95-1324, slip op. at 8-10 (D.C. Cir. June 25, 1996).]

As discussed in this fact sheet, the application of adjustment factors to "J" qualified data can serve as a management decision tool to "adjust," or take into account, the analytical uncertainty in the data indicated by the qualifier, thereby making qualified data usable for HRS evaluation. The use of adjustment factors to account for the larger uncertainty in "J" qualified data is a conservative approach enabling a quantitative comparison of the data for use in documenting an observed release. It should be noted that the use of

adjustment factors only addresses analytical variability and does not take into account variabilities which may be introduced during field sampling. Some guidelines for using the adjustment factor approach are discussed in Exhibit 1.

## CLP QA/QC PROCEDURES

CLP qualifiers are applied to analytical data based on the results of various Quality Assurance/Quality Control (QA/QC) procedures used at the laboratory. EPA analytical methods use a number of QA/QC mechanisms during sample analysis in order to assess qualitative and quantitative accuracy (*Contract Laboratory Program Statement of Work for Inorganic Analyses*, Document No. ILM02.0; *Contract Laboratory Program Statement of Work for Organic Analyses*, Document No. OLM1.8; *Quality Assurance/Quality Control Samples*, Environmental Response Team Quality Assurance Technical Information Bulletin; *Test Methods for Evaluating Solid Waste (SW-846): Physical and Chemical Methods*, Document No. SW-846). To assess data quality, the laboratory uses matrix spikes, matrix spike duplicates, laboratory control samples, surrogates, blanks, laboratory duplicates, and quarterly blind performance evaluation (PE) samples. The Agency assumes that if biases are found in the QA/QC samples, the field sample concentrations may also be biased.

Surrogates are chemically similar to the analytes of interest. They are added or "spiked" at a known concentration into the field samples before analysis. Also, selected target analytes are "spiked" into samples at a specified frequency to assess potential interferences from the sample matrix. These samples are called matrix spikes. Comparison of the known concentration of the surrogates and matrix spikes with their actual analytical results reflects the analytical accuracy. Because the surrogates are expected to behave similarly to the target analytes, they may indicate bias caused by interferences from the sample matrices. These type of interferences from the sample matrix are known as matrix effects (*CPL National Functional Guidelines for Inorganic Data Review*, Publication, 9240.1-05-01; *CLP National Functional Guidelines for Organic Data Review*, Publication 9240.1-05; *Test Methods for Evaluating Solid Waste (SW-846): Physical and Chemical Methods*, Document No. SW-846).

Laboratory control samples are zero blind samples which contain known concentrations of specific

analytes and are analyzed in the same batch as field samples. Their results are used to measure laboratory accuracy. Blanks are analyzed to detect any extraneous contamination introduced either in the field or in the laboratory.

Laboratory duplicates are created when one sample undergoes two separate analyses. The duplicate results are compared to determine laboratory precision. Quarterly blind PE samples are single blind samples that evaluate the laboratory's capability of performing the specified analytical protocol.

CLP and other EPA analytical methods include specifications for acceptable analyte identification, target analytes, and minimum and maximum percent recovery of the QA/QC compounds. Data are validated according to guidelines which set performance criteria for instrument calibration, analyte identification, and identification and recovery of QA/QC compounds (*CLP Statement of Work and SW-846*). The *National Functional Guidelines for Data Review*, EPA validation, was designed for the assessment of data generated under the CLP organic and inorganic analytical protocols (*CLP Statement of Work; National Functional Guidelines for Data Review*). The guidelines do not preclude the validation of field and other non CLP data. Thus, many EPA Regions have also adapted the *National Functional Guidelines for Data Review* to validate non-CLP data. Data which do not meet the guidelines' performance criteria are qualified to indicate bias or QA/QC deficiencies. The data validation report usually explains why the data were qualified and indicates the bias direction when it can be determined. Validated data that are not qualified are considered unbiased and can be used at their reported numerical value for HRS evaluation.

## QUALIFIER DEFINITIONS

Most EPA validation guidelines use the data qualifiers presented in Exhibit 2 (*CLP National Functional Guidelines for Data Review*). Other qualifiers besides these may be used; the validation report should always be checked for the exact list of qualifiers and their meanings.

It should be emphasized that not meeting one or some of the contract required QA/QC acceptance criteria is often an indication that the sample was difficult to analyze, not that there is low confidence in the analysis (i.e., the

**EXHIBIT 1**  
**GUIDELINES FOR THE USE OF ADJUSTMENT FACTORS**

- The use of adjustment factors identified in this fact sheet is a management tool for the optional use of “J” qualified data generated under CLP or other sources of data to document an observed release.
- Adjustment qualified data should be used with non-qualified data whenever possible.
- EPA maintains a “worst sites first” policy for placing sites on the NPL (*Additional Guidance on “Worst Sites” and “NPL Caliber Sites” to assist in SACM Implementation*, OSWER Directive 9320.2-07).
- EPA Regions should use adjustment factors with discretion on a case-by-case basis and should always carefully consider the use of qualified data in borderline cases.
- Resampling and/or reanalysis may be warranted if qualified data do not appear adequate to document an observed release.
- EPA Regions may substitute higher adjustment factors based on documented, justifiable reasons but may never use a lower adjustment factor value.
- The adjustment factors should only be applied to analytes listed in the tables. These adjustment factors should not be interpolated or extrapolated to develop factors for analytes not listed in the tables.
- The adjustment factors apply only to “J” qualified data above the CRQL.
- Detection below the CRQL is treated as non-quantifiable for HRS purposes.
- “UJ” data may be used under strict circumstances as explained in this fact sheet.
- The adjustment factors only apply to biased “J” qualified data, not to other “J” qualified data.
- The adjustment factors do not apply to “N”, “NJ”, or “R” qualified data. These data can not be used to document an observed release for HRS purposes.

analysis is “under control” and can be adequate for HRS decisionmaking). Often “J”, “U”, and “UJ” qualified data fall into this category.

There are instances when qualified data cannot be used since the uncertainty of the results is unknown. For example, violations of laboratory instrument calibration and tuning requirements, and gross violations of holding times reflect the possibility that the results are of unknown quality (i.e., the analysis is “out of control”). Most often these data would be qualified with an “R” or an “N” (not usable for HRS purposes).

#### USING “U” QUALIFIED DATA

The “U” qualifier simply means that the reported concentration of the analyte was at or below the CRQL-- there can be confidence that the true concentration is at or below the quantitation limit. Therefore, “U” qualified data can be

used for establishing background levels. If the release sample concentration is above this level, as specified in the HRS, an observed release can be established. The quantitation limit for that analyte could be used as a maximum background concentration if a more conservative background level seems appropriate.

#### USING “J” QUALIFIED DATA

As discussed previously, some “J” qualified data can be used in establishing an observed release if the uncertainty in the reported values is documented. Qualified data should always be carefully examined by the Regions to determine the reasons for qualification before use in HRS evaluation. Resampling and/or reanalysis may be warranted if qualified data only marginally document an observed release. Whenever possible, qualified data should be used in conjunction with non-qualified data.



As described in Exhibit 2, "J" qualified data indicates that bias has been detected in the sample analysis and although the analyte is definitively present, the reported concentration is an estimate. Depending on the reasons and the direction of bias, with the use of adjustment factors, "J" qualified data can represent data of known and documented quality sufficient for use in establishing an observed release and observed contamination under the HRS.

#### USING "UJ" QUALIFIED DATA

A combination of the "U" and "J" qualifiers indicates that the reported value may not accurately represent the concentration necessary to positively detect the analyte in the sample. Under limited conditions, "UJ" qualified data can be used to represent background concentrations for establishing an observed release. These conditions are: instances when there is confidence that the background concentration is not detectable above the CRQL, the background concentration is biased high, and the sample measurement establishing the observed release equals or exceeds the CRQL.

#### DIRECTION OF BIAS IN "J" QUALIFIED DATA

It is important to understand the direction of bias associated with "J" qualified data before using the data to document an observed release. Qualified data may have high, low, or unknown bias. A low bias means that the reported concentration is likely an underestimate of the true concentration. For example, data may be biased low when sample holding times for volatile organic compounds (VOCs) are moderately exceeded or when recovery of QA/QC compounds is significantly less than the amount introduced into the sample. Low surrogate recovery would also indicate a low bias. A high bias means the reported concentration is likely an overestimate of the true concentration. For example, data may be biased high when recovery of QA/QC compounds is significantly higher than the amount in the sample. A bias is unknown when it is impossible to ascertain whether the concentration is an overestimate or an underestimate. For example, an unknown bias could result when surrogate recoveries exceed method recovery criteria and matrix spike/matrix spike duplicate compounds below method recovery criteria fail the relative percent difference (RPD) criteria in the same sample.

Despite the bias, certain qualified data may be used

without application of adjustment factors for determining an observed release under certain circumstances. The following examples are of using "J" qualified data without adjustment factors:

- Low bias release samples are likely to be underestimates of true concentrations. If the reported concentration of a low bias release sample is three times above unbiased background levels, these release samples would still meet the HRS criteria. The true concentrations would still be three times above the background level.
- High bias background samples are likely to be overestimates of true concentrations. If the reported concentration of unbiased release samples are three times above the reported background concentration, they would still meet the HRS observed release criteria because they would still be three times above the true background concentration.

The above examples show that both low bias "J" qualified release samples at their reported concentrations and high bias "J" qualified background samples may be used at their reported concentrations in these situations.

High bias release samples may not be used at their reported concentrations because they are an overestimate of true concentrations in this situation; resampling and/or re-analysis of the release samples should be considered. The true difference in the background and release concentration may be less than the HRS criteria for establishing an observed release. The reported concentration for low bias background concentrations may not be compared to release samples because it is most likely an underestimate of background level; the release sample concentration may not significantly exceed the true background concentration. However, in lieu of re-sampling and/or re-analysis, high bias release data and low bias background data may be used with adjustment factors which compensate for the probable uncertainty in the analyses.

#### ADJUSTMENT FACTORS FOR BIASED "J" QUALIFIED DATA

Applying adjustment factors to "J" qualified data will enable EPA to be more confident that the increase in contaminant concentrations between the background and

**EXHIBIT 2**  
**EPA CLP DATA QUALIFIERS AND THEIR USABILITY FOR DOCUMENTING AN OBSERVED RELEASE**

Usable*	Not Usable
<p><b>“U”</b> The substance or analyte was analyzed for, but no quantifiable concentration was found at or above the CRQL (<i>CLP National Functional Guidelines for Data Review</i>).</p>	<p><b>“N”</b> The analysis indicates the presence of an analyte for which there is presumptive evidence to make a “tentative identification” (<i>CLP National Functional Guidelines for Data Review</i>).</p>
<p><b>“J”</b> The analyte was positively identified-the associated numerical value is the approximate concentration of the analyte in the sample. The “J” qualifier indicates that one or more QA/QC requirements have not met contact required acceptance criteria but the instrumentation was functioning properly during the analysis. For example, a “J” qualifier may indicate that the sample was difficult to analyze or that the value may lay near the low end of the linear range of the instrument. “J” data are considered biased, but provide definitive analyte identification (<i>CLP National Functional Guidelines for Data Review</i>).</p>	<p><b>“R”</b> The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria. The presence or absence of the analyte can not be verified and the result has been rejected. A sample result may be qualified with an “R” qualifier when the instrument did not remain “in control” or the stability or sensitivity of the instrument were not maintained during the analysis (<i>CLP National Functional Guidelines for Data Review</i>).</p>
<p><b>“UJ”</b> The analyte was not quantifiable at or above the CRQL. In addition to not being quantifiable, one or more QA/QC requirements have not met contract acceptance criteria (<i>CLP Functional Guidelines for Data Review</i>).</p>	<p><b>“NJ”</b> The analysis indicates the presence of the analyte that has been “tentatively identified” and the associated numerical value represents it’s approximate concentration (<i>CLP National Functional Guidelines for Data Review</i>).</p>

\* Usable under certain circumstances as explained in this fact sheet.

release samples is due to a release. The adjustment factors are applied as “safety factors” to compensate for analytical uncertainty, allowing biased data to be used for determining an observed release. Dividing the high bias result by an adjustment factor deflates it from the high end of the acceptable range towards a low bias value. Multiplying a low bias concentration by an adjustment factor inflates it to the high end of the acceptable range.

Tables 1 through 4 (pages 11 - 18) present analyte and matrix-specific adjustment factors to address the analytical uncertainty when determining an observed release using high bias release samples and low bias background data. The factors are derived from percent recoveries of matrix spikes, surrogates, and laboratory control samples in the CLP Analytical Results Database

(CARD) from January 1991 to March 1996. A total of 32,447 samples were reviewed for volatile organic analytes; 32,913 samples for semivolatile organic analytes; 59,508 samples for pesticides/PCB analytes; and 5,954 samples for inorganic analytes.

The range of CARD data for each analyte includes 97 percent of all percent recoveries in the database, discarding outliers. The adjustment factors are ratios of percent recovery values at the 98.5 and 1.5 percentiles. The ratios generally show a consistent pattern.

Adjustment factors have been determined for all analytes in the CLP Target Compound List (organic analytes) and Target Analyte List (inorganic analytes). A tiered approach was used to derive the organic adjustment factors. Percent recoveries for surrogates were

examined first, followed by matrix spike recoveries. When both matrix spike and surrogate data were available for the same analyte, the larger adjustment factor (representing more extreme high and low percent recoveries) was used. Laboratory control samples were used to calculate the inorganic adjustment factors. Quarterly blind sample data were not used to determine adjustment factors because of the small data set available. A default adjustment factor of 10 was used for analytes when percent recovery data were unavailable.

Adjustment factors do not correct the biased sample concentration to its true value, as such "correction" is not possible. CARD data do not differentiate and quantify individual sources of variation. Instead, the ratio of percentile used to develop adjustment factors represent a "worst-case" scenario. Adjustment factors either inflate background values to the high end of the range or deflate release data to the low end. Therefore, adjustment factors compensate or adjust for the apparent analytical variability when comparing a high bias value to a low bias value (see Exhibit 3).

## USING THE ADJUSTMENT FACTORS

This section of the fact sheet demonstrates how adjustment factors can be used with "J" qualified data for HRS scoring purposes, including documentation and detection limit issues.

### Documentation Requirements for Using Qualified Data

In using "J" qualified data to determine an observed release, include a discussion of "J" qualifiers from the data validation report and cite it as a reference in the site assessment report or HRS documentation record. If adjustment factors are applied to "J" qualified data, reference and cite this fact sheet. These steps will ensure that the direction of bias is documented and will demonstrate how biases have been adjusted.

### Detection Limit Restrictions

Adjustment factors may only be applied to "J" qualified data with concentrations above the CLP CRQL for organics or CRDL for inorganics. "J" qualified data with concentrations below the CRQL can not be used to document an observed release except as specified in the previous section entitled "Using 'UP' Qualified Data."

### Application of Factors

Exhibit 3 shows how to apply the factors to "J" qualified data. Multiply low bias background sample results by the

analyte-specific adjustment factor or the default factor 10 when analyte-specific adjustment factor is not available. The resulting new background value effectively becomes a high bias value that may be used to determine an observed release. Divide high bias release sample data by the analyte-specific adjustment factor or the default factor of 10 when an analyte-specific adjustment factor is not available. The resulting new release sample value effectively becomes a low bias value that may be used to determine an observed release.

Note: High bias background data, low bias release data, and unbiased data may be used at their reported concentrations.

Note: Adjusted release and background values must still meet HRS criteria (e.g., release concentration must be at least three times above background level) to determine an observed release.

### Examples Using Trichloroethene in Soil and Water

1. *Release water sample is unbiased, background water sample is unbiased but all data are qualified with a "J" due to an contractual laboratory error no: analytical error.*

Background sample value: 12  $\mu\text{g/L}$  (J) no bias

Release sample value: 40  $\mu\text{g/L}$  (J) no bias

The CRQL for trichloroethene is 10  $\mu\text{g/Kg}$  for soil and 10  $\mu\text{g/L}$  for water.

In this example, the qualification of the data is not related to bias in the reported concentrations. Thus, using adjustment factors is not needed and an observed release is established if all other criteria are met.

2. *Release soil sample data is biased low, background soil sample data is biased high.*

Background sample value: 12  $\mu\text{g/Kg}$  (J) high bias

Release sample value: 40  $\mu\text{g/Kg}$  (J) low bias

In this example, the direction of bias indicates that the true release value may be higher and the true background value may be lower than reported values. The release sample concentration still exceeds background by more than three times, so an observed release is established, provided all other HRS criteria are met. Using adjustment factors is not needed.

EXHIBIT 3 USE OF ADJUSTMENT FACTORS FOR "J" QUALIFIED DATA		
Type of Sample	Type of Bias	Action Required
Background Sample	No Bias	None: Use concentration without factor
	Low Bias	Multiply concentration by factor
	High Bias	None: Use concentration without factor
	Unknown Bias	Multiply concentration by factor
Release Sample	No Bias	None: Use concentration without factor
	Low Bias	None: Use concentration without factor
	High Bias	Divide concentration by factor
	Unknown Bias	Divide concentration by factor

3. *Release soil sample data is unbiased, background soil sample is biased low.*

Background sample value: 12  $\mu\text{g/Kg}$  (J) *low bias*  
Release sample value: 30  $\mu\text{g/Kg}$  *no bias*

In this example, the true background value is assumed to be less than the reported value; however, an observed release may still be possible. To use the data to establish an observed release, multiply the background sample data value by the adjustment factor given for trichloroethene in soil (2.11). No adjustment factor is needed for the release sample.

New background sample value:  
 $(12 \mu\text{g/Kg}) \times (2.11) = 25.32 \mu\text{g/Kg}$  (J) *high bias*

The release sample concentration does not meet or exceed the new background level by three times, so an observed release is not established.

4. *Release water sample data is biased high, background water sample data is unbiased.*

Background sample value: 15  $\mu\text{g/L}$  *no bias*  
Release sample value: 70  $\mu\text{g/L}$  (J) *high bias*

In this example, the true release value may be lower than the reported value; however, an observed release may still be possible. To use the data to establish an observed release divide the release sample by the adjustment factor

for trichloroethene in water (1.66). No adjustment factor is needed for the background sample.

New release sample value:  
 $(70 \mu\text{g/L}) \div (1.66) = 42.17 \mu\text{g/L}$  (J) *low bias*

The new release sample concentration does not meet or exceed the background level by three times, so an observed release is not established.

5. *Release soil sample data has unknown bias; background soil sample data has unknown bias.*

The following example is the most conservative approach to using adjustment factors with qualified data.

Background sample value: 20  $\mu\text{g/Kg}$  (J) *unknown bias*  
Release sample value: 325  $\mu\text{g/Kg}$  (J) *unknown bias*

In this example, it is not possible to determine from the reported values if an observed release is possible. To use the data to establish an observed release, divide the release sample value and multiply the background sample value by the adjustment factor given for trichloroethene in soil (2.11).

New release sample value:  
 $(325 \mu\text{g/Kg}) \div (2.11) = 154.03 \mu\text{g/Kg}$  (J) *low bias*

New background sample value:  
 $(20 \mu\text{g/Kg}) \times (2.11) = 42.2 \mu\text{g/Kg}$  (J) *high bias*

The new release sample is at least three times the new background concentration, so an observed release is established, provided all other HRS criteria are met.

## ISSUES WITH USING ADJUSTMENT FACTOR APPROACH

Some issues were raised regarding the application of adjustment factors to qualified data during the Agency's internal review process.

One issue is that "J" qualifiers are added to analytical results for many reasons that may or may not affect the accuracy and precision of the analytical result. The application of an adjustment factor to "J" qualified data in which bias is not affected could be considered overly conservative.

All qualified data should be carefully evaluated to determine if the data are biased. Based on the reasons for bias, the use of an adjustment factor should only be considered as a management tool that provides a quick screening of the data for site assessment, not a means for correcting the biased value to a true value. Application of adjustment factors are intended for use with qualified data reported at or above the CRQL and may not be applicable to data which are qualified but technically sound. As stated previously, qualified data should always be carefully reviewed on a case-by-case basis prior to use in HRS evaluation.

Another issue is the validity of "10" as a default adjustment factor. A default adjustment factor of 10 was a policy decision based on the range of adjustment factors and an industry approach. The default was chosen in order to account for the maximum variability regardless of the direction of the bias. Therefore, the default value of 10 is generally considered to be a conservative adjustment factor. EPA reviewed the use of the default value of 10 and determined that this value was conservative.

Even if using adjustment factors is sometimes overly conservative, this approach is preferable to not using the data at all. EPA maintains a "worst sites first" policy that only the sites considered most harmful to human health and/or the environment should be listed. EPA considers the use of adjustment factors appropriate as a management decision tool. However, discretion is needed when applying adjustment factors. The use of adjustment factors may not be appropriate in all cases.

## USE OF OTHER ADJUSTMENT FACTORS

EPA Regions may substitute higher, but never lower, adjustment factor values for the ones listed in this fact sheet on a case-by-case basis when technically justified. For example, other adjustment factors may be applied to conform with site-specific Data Quality Objectives (DQOs) or with Regional Standard Operating Procedures (SOPs) (*Data Quality Objectives Process for Superfund, Publication 9355.9-01*).

## SUMMARY

For site assessment purposes, EPA Regions should not automatically discard "J" qualified data. However, site-specific data usability determinations may result in the data's not being used.

Data qualified under the EPA's CLP or from other sources of validated data may be used to demonstrate an observed release if certain measures are taken to ensure that the bias of the data qualifier is adjusted using the factor approach specified in this fact sheet. (This fact sheet provides a management decision tool for making qualified data usable for documenting an observed release.) The analyte and matrix-specific adjustment factors provided in Tables 1 through 4 of this fact sheet present these adjustment factors.

The scope of this fact sheet is limited to the situations described in Exhibit 1. The use of qualified analytical data without the adjustment factors presented in this fact sheet is limited. Higher adjustment factors may be substituted by EPA Regions on a case-by-case basis when technically justified by site-specific DQOs or SOPs.

## REFERENCES

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**TABLE 1  
FACTORS FOR VOLATILE ORGANIC ANALYTES**

VOLATILE ORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD Samples Reviewed	Factor	Number of CARD Samples Reviewed	Factor
1,1,1-TRICHLOROETHANE	---	10.0	---	10.0
1,1,2,2-TETRACHLOROETHANE	---	10.0	---	10.0
1,1,2-TRICHLOROETHANE	---	10.0	---	10.0
1,1-DICHLOROETHANE	---	10.0	---	10.0
1,1-DICHLOROETHENE	7,031	2.71	5,015	2.35
1,2-DICHLOROETHANE-D4	32,446	1.52	25,516	1.38
1,2-DICHLOROETHENE (TOTAL)	---	10.0	---	10.0
1,2-DICHLOROPROPANE	---	10.0	---	10.0
2-BUTANONE	---	10.0	---	10.0
2-HEXANONE	---	10.0	---	10.0
4-METHYL-2-PENTANONE	---	10.0	---	10.0
ACETONE	---	10.0	---	10.0
BENZENE	7,024	1.97	5,001	1.64
BROMODICHLOROMETHANE	---	10.0	--	10.0
BROMOFORM	---	10.0	---	10.0
BROMOFLUOROBENZENE	32,444	1.7	25,518	1.26
BROMOMETHANE	---	10.0	---	10.0
CARBON DISULFIDE	---	10.0	---	10.0

**TABLE 1**  
**FACTORS FOR VOLATILE ORGANIC ANALYTES**

VOLATILE ORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD Samples Reviewed	Factor	Number of CARD Samples Reviewed	Factor
CARBON TETRACHLORIDE	---	10.0	---	10.0
CHLOROBENZENE	7,018	2.0	5,015	1.54
CHLOROETHANE	---	10.0	---	10.0
CHLOROFORM	---	10.0	---	10.0
CHLOROMETHANE	---	10.0	---	10.0
CIS-1,3-DICHLOROPROPENE	---	10.0	---	10.0
DIBROMOCHLOROMETHANE	---	10.0	---	10.0
ETHYLBENZENE	---	10.0	---	10.0
METHYLENE CHLORIDE	---	10.0	---	10.0
STYRENE	---	10.0	---	10.0
TETRACHLOROETHENE	---	10.0	---	10.0
TOLUENE-D8	32,447	1.63	25,526	1.21
TRANS-1,3-DICHLOROPROPENE	---	10.0	---	10.0
TRICHLOROETHENE	6,988	2.11	4,938	1.66
VINYL CHLORIDE	---	10.0	---	10.0
XYLENE (TOTAL)	---	10.0	---	10.0



**TABLE 2**  
**FACTORS FOR SEMIVOLATILE ORGANIC ANALYTES**

SEMIVOLATILE ORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD sample Reviewed	Factor	Number of CARD Samples Reviewed	Factor
1,2,4-TRICHLOROBENZENE	6,792	4.83	4,605	3.71
1,2-DICHLOROBENZENE-D4	32,848	4.22	21,506	3.0
1,3-DICHLOROBENZENE	---	10.0	---	10.0
1,4-DICHLOROBENZENE	6,796	6.0	4,599	3.85
2,2'-OXYBIS(1-CHLOROPROPANE)	---	10.0	---	10.0
2,4,6-TRIBROMOPHENOL	32,605	9.38	21,509	3.57
2,4,5-TRICHLOROPHENOL	---	10.0	---	10.0
2,4,6-TRICHLOROPHENOL	---	10.0	---	10.0
2,4-DICHLOROPHENOL	---	10.0	---	10.0
2,4-DIMETHYLPHENOL	---	10.0	---	10.0
2,4-DINITROPHENOL	---	10.0	---	10.0
2,4-DINITROTOLUENE	6,798	4.88	4,623	3.52
2,6-DINITROTOLUENE	---	10.0	---	10.0
2-CHLORONAPHTHALENE	---	10.0	---	10.0
2-CHLOROPHENOL-D4	32,798	4.08	21,506	2.92
2-FLUOROBIPHENYL	32,913	3.38	21,532	2.84
2-FLUOROPHENOL	32,781	5.05	21,511	3.34
2-METHYLNAPHTHALENE	---	10.0	---	10.0
2-METHYLPHENOL	---	10.0	---	10.0
2-NITROANILINE	---	10.0	---	10.0
2-NITROPHENOL	---	10.0	---	10.0
3,3'-DICHLOROBENZIDINE	---	10.0	---	10.0
3-NITROANILINE	---	10.0	---	10.0
4,6-DINITRO-2-METHYLPHENOL	---	10.0	---	10.0
4-BROMOPHENYL-PHENYETHER	---	10.0	---	10.0

**TABLE 2**  
**FACTORS FOR SEMIVOLATILE ORGANIC ANALYTES**

SEMIVOLATILE ORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD Sample Reviewed	Factor	Number of CARD Samples Reviewed	Factor
4-CHLORO-3-METHYLPHENOL	6,715	6.26	4,609	4.46
4-CHLOROANILINE	---	10.0	---	10.0
4-CHLOROPHENYL- PHENYLETHER	---	10.0	---	10.0
4-METHYLPHENOL	---	10.0	---	10.0
4-NITROANILINE	---	10.0	---	10.0
4-NITROPHENOL	6,627	9.33	4,586	5.96
ACENAPHTHENE	6,773	4.68	4,600	3.63
ACENAPHTHYLENE	---	10.0	---	10.0
ANTHRACENE	---	10.0	---	10.0
BENZO(A)ANTHRACENE	---	10.0	---	10.0
BENZO(A)PYRENE	---	10.0	---	10.0
BENZO(B)FLUORANTHENE	---	10.0	---	10.0
BENZO(G,H,I)PERYLENE	---	10.0	---	10.0
BENZO(K)FLUORANTHENE	---	10.0	---	10.0
BIS(2-CHLOROETHOXY)METHANE	---	10.0	---	10.0
BIS(2-CHLOROETHYL)ETHER	---	10.0	---	10.0
BIS(2-ETHYLHEXYL)PHTHALATE	---	10.0	---	10.0
BUTYLBENZYLPHTHALATE	---	10.0	---	10.0
CARBAZOLE	---	10.0	---	10.0
CHRYSENE	---	10.0	---	10.0
DI-N-BUTYLPHTHALATE	---	10.0	---	10.0
DI-N-OCTYLPHTHALATE	---	10.0	---	10.0
DIBENZ(A,H)ANTHRACENE	---	10.0	---	10.0
DIBENZOFURAN	---	10.0	---	10.0
DIETHYLPHTHALATE	---	10.0	---	10.0

**TABLE 2**  
**FACTORS FOR SEMIVOLATILE ORGANIC ANALYTES**

SEMIVOLATILE ORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD Sample Reviewed	Factor	Number of CARD Samples Reviewed	Factor
DIMETHYLPHTHALATE	---	10.0	---	10.0
FLUORANTHENE	---	10.0	---	10.0
FLUORENE	---	10.0	---	10.0
HEXACHLOROBENZENE	---	10.0	---	10.0
HEXACHLOROBUTADIENE	---	10.0	--	10.0
HEXACHLOROCYCLOPENTADIENE	---	10.0	---	10.0
HEXACHLOROETHANE	---	10.0	---	10.0
INDENO(1,2,3-CD)PYRENE	---	10.0	---	10.0
ISOPHORONE	---	10.0	---	10.0
N-NITROSO-DI-N-PROPYLAMINE	6,725	4.92	4,513	4.0
N-NITROSODIPHENYLAMINE(1)	---	10.0	---	10.0
NAPHTHALENE	---	10.0	--	10.0
NITROBENZENE-D5	32,867	3.96	21,533	2.73
PENTACHLOROPHENOL	6,597	72.5	4,550	10.12
PHENANTHRENE	---	10.0	---	10.
PHENOL-D5	32,855	3.85	21,489	3.53
PYRENE	6,543	11.86	4,612	5.67
TERPHENYL-D14	32,899	4.35	21,541	6.32

**TABLE 3  
FACTORS FOR PESTICIDES/PCB ANALYTES**

VOLATILE ORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD Samples Reviewed	Factor	Number of CARD Samples Reviewed	Factor
4,4'-DDD	---	10.0	---	10.0
4,4'-DDE	---	10.0	---	10.0
4,4'-DDT	5,343	12.82	3,850	7.14
ALDRIN	5,526	14.26	3,829	6.63
ALPHA-BHC	---	10.0	---	10.0
ALPHA-CHLORDANE	---	10.0	---	10.0
AROCLOR-1016	---	10.0	---	10.0
AROCLOR-1221	---	10.0	---	10.0
AROCLOR-1232	---	10.0	---	10.0
AROCLOR-1242	---	10.0	---	10.0
AROCLOR-1248	---	10.0	---	10.0
AROCLOR-1254	---	10.0	---	10.0
AROCLOR-1260	---	10.0	---	10.0
BETA-BHC	---	10.0	---	10.0
DECACHLOROBIPHENYL	57,315	17.79	33,592	10.0
DELTA-BHC	---	10.0	---	10.0
DIELDRIN	5,539	11.93	3,861	4.87

**TABLE 4**  
**FACTORS FOR INORGANIC ANALYTES**

VOLATILE ORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD Samples Reviewed	Factor	Number of CARD Samples Reviewed	Factor
ALUMINUM	5387	1.66	6208	1.30
ANTIMONY	5392	1.98	6170	1.27
ARSENIC	5675	1.74	6303	1.35
BARIUM	5360	3.99	6201	1.25
BERYLLIUM	5399	1.28	6208	1.25
CADMIUM	5385	1.41	6166	1.29
CALCIUM	5383	1.28	6201	1.24
CHROMIUM	5389	1.29	6210	1.30
COBALT	5392	1.25	6212	1.27
COPPER	5394	1.22	6205	1.25
CYANIDE	3281	1.55	225	1.36
IRON	5391	1.34	6216	1.27
LEAD	5982	1.44	6384	1.31
MAGNESIUM	5397	1.23	6210	1.24
MANGANESE	5395	1.24	6214	1.28
MERCURY	5954	1.83	256	1.50
NICKEL	5400	1.35	6210	1.29
POTASSIUM	3874	17.49	6175	1.24
SELENIUM	5620	2.38	6278	1.14
SILVER	5392	1.74	6215	1.42
SODIUM	5024	25.43	6195	1.26
THALLIUM	5621	1.86	6253	1.37
VANADIUM	5393	1.34	6212	1.25
ZINC	5404	1.50	6224	1.29

TABLE 3 FACTORS FOR PESTICIDES/PCB ANALYTES				
VOLATILE ORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD Samples Reviewed	Factor	Number of CARD Samples Reviewed	Factor
ENDOSULFAN I	—	10.0	---	10.0
ENDOSULFAN II	—	10.0	---	10.0
ENDOSULFAN SULFATE	---	10.0	---	10.0
ENDRIN	5,521	14.13	3,850	5.33
ENDRIN ALDEHYDE	---	10.0	---	10.0
ENDRIN KETONE	---	10.0	---	10.0
GAMMA-BHC (LINDANE)	5,545	11.79	3,832	10.0
GAMMA-CHLORDANE	---	10.0	---	10.0
HEPTACHLOR	5,548	7.88	3,836	5.26
HEPTACHLOR EPOXIDE	---	10.0	---	10.0
METHOXYCHLOR	---	10.0	---	10.0
TETRACHLORO-M-XYLENE	59,508	8.5	33,787	5.29
TOXAPHENE	---	10.0	---	10.0